INDEX TO VOLUME 55

[NOTE.—In this index the title to principal papers and headings of departments, as *Discussions*, are in italics.]

A.I.M.E., Geological Engineering Education Committee, 1049
Aachen sulfide district, West Germany, sulfur isotopes, 525
Abbott, A. T., on metamorphic differentiation, 1180
Abdullaev, Kh. M., review of book by, 849
Abraham, E. H., on Blind River area, Ont., 907
Abraham, E. M., on Murray fault system, Ont., 670
Abraham, H., on coal metamorphism, 1717
Abstracts, Apparent age and migration of uranium in deposits in sandstone based on radiochemical analyses (Robinson and Rosholt), 1332
Application of reaction Eh-pH diagrams to the problems of supergene oxidation and enrichment of sulfide ore bodies (Sato), 1331
Application of the gravity method to iron ore exploration (Hinze), 465
Application of the sphalerite geothermometer to some northern New Brunswick sulfide deposits (Benson), 818
Application of thermoluminescence to prospecting for hydrothermal ores (Macdiarmid), 1340
Bauxite deposit in the Paleozoic of Leon, Spain (Font-Altaba and Closas M.), 1285
Behavior of sulfur under magmatic and hydrothermal conditions and its effect on S^{33}/S^{34} ratios (Ridge), 1330
Blind River uranium ores and their origin (Robertson and Steenland), 659
Breccia and pebble columns associated with hydrothermal ore deposits (Bryner), 1334
Chalcopyrite blebs in sphalerite at Johnson Camp, Arizona (Baker), 387
Chemical characteristics of davidite (Butler and Hall), 1541
Chief Oxide-Burgin area discoveries, East Tintic district, Utah; A case history Part I (Lovering and Morris), 1116; Part II (Bush and Cook), 1508
Clay minerals associated with the Lake Superior iron ores (Bailey and Tyler), 150
Clay minerals in bauxite deposits of Europe (Allen), 1338
Abstracts—*Continued*
Comments regarding the Blind River (Algoma) uranium ores and their origin (Joubin), 1751
Comparative study of major ore deposits of central Bolivia (Turneaure), 217
Comparison of analytical methods used in geochemical prospecting for copper (Huff *et al.*), 1329
Composition and age of the Temiscamie iron-formation, Mistassini Territory, Quebec, Canada (Quirke, Goldich, Krueger), 311
Compositional variation of alkali feldspars in some intrusive rocks near Globe-Miami, Arizona (Kuellmer), 557
Constitution of davidite (Hayton), 1030
Controls on ore deposition at the Bristol silver mine—Pioche, Nevada (Macdiarmid), 1337
Copper mineralization in the Catoctin formation, Virginia (Brophy), 1325
Critical remarks on the genesis of ore as applied to future mineral exploration (Sales), 805
Curricular and professional aspects of geological engineering (Neilson, Snelgrove, and Van Pelt), 1048
Deposits of the manganese oxides (Hewett and Fleischer), 2
Detrital-appearing uraninite grains in the Shinarump member of the Chinle formation in northern Arizona (Petersen), 138
Diamond drill hole deviation in the Blind River area (Robertson), 1341
Differences between barren and productive intrusive porphyry (Stringham), 1622
Discovery of a copper-zinc deposit at Garon Lake, Quebec (Joklik), 338
Evidence of the origin of the Blind River uranium deposits (Derry), 906
Extractability of humic acid from coalified logs as a guide to temperatures in Colorado Plateau sediments (Breger and Chandler), 1039
Fe-As-S system: Phase relations and applications (Clark), 1346
Fringe zone alteration in carbonate rocks—North Tintic mining district, Utah (Proctor), 1341

Abstracts—*Continued*
Genesis of chrysotile asbestos in the Cassiar asbestos deposit, northern British Columbia (Gabrielse), 327
Genesis of the Gore Mountain garnet deposit, New York (Bartholomé), 255
Genetic aspects of the monazite and columbium-bearing rutile deposits in northern Lemhi County, Idaho (Anderson), 1179
Geochemical investigation of the Athabasca bituminous sands (Champlin and Dunning), 797
Geochemical prospecting and appraisal of niobium-bearing carbonatites by x-ray methods (Van Wambeke), 732
Geologic structure in the Mascot-Jefferson City, Tennessee, zinc district (Brokaw), 1326
Geological interpretation of lead ore isotopes (Brown), 1330
Geology, sulfur isotopes and the origin of the Heath Steele ore deposits, Newcastle, N. B., Canada (Dechow), 539
Geology and heavy mineral content of placer deposits in the Elk City region, Idaho (Reid), 1325
Geology and ore deposits of the Mattagami area, Quebec (Jenney), 1326
Geology of the Braden orebody, Chile, South America (Howell and Molloy), 864
Geology of the Decaturville disturbance in Missouri (Krishnaswamy and Amstutz), 1340
Ground water in north-central Connecticut (Cushman), 101
Hypogene mineral zoning, Central City district, Colorado (Sims), 1328
Inclusions in cassiterite and associated minerals (Little), 485
Intrusion and ore deposition in New Mexico (Belt), 1244
Isotopic composition of lead and Precambrian mineralization of the Coeur d'Alene district, Idaho (Long, Silverman, and Kulp), 645
Kaolinitic sediments in peninsular Florida and origin of the kaolin (Pirkle), 1382
Lithologic classification of taconite from the type locality (Gundersen), 563
Magmatic and non-magmatic ores (Sullivan), 1328
Manganese oxides and associated minerals of the Nsuta manganese deposits, Ghana, West Africa (Sorem and Cameron), 278
Massive sulfide deposits in eugeosynclinal belts (Miller), 1327
Metallization and post-mineral hypogene argillization, Lost River tin mine, Alaska (Sainsbury), 1478
Abstracts—*Continued*
Method of mounting minute particulate samples of opaque ore minerals for quantitative microscopic analysis (Dillinger and Sclar), 187
Minor elements in phosphorites of the Phosphoria formation (Culbrandson), 1333
Nature and origin of central Idaho blacksands (Savage), 789
New geochemical method for the determination of molybdenum in soil and rock (Perry), 1232
Nickel, cobalt, copper, zinc, lead and sulfur contents of some North American base-metal sulfide ores (Kilburn), 115
Non-conglomeratic ores of the Pronto uranium deposit, Blind River area, Ontario, Canada (Heinrich and Masterman), 1332
Occurrence of strontium in the surface and ground waters of Champaign County, Ohio (Feulner and Hubble), 176
Ore controls in the Morococha district, Peru (Nagell), 962
Ore deposits and sedimentary features Jefferson City mine, Tennessee (Kendall), 985
Origin of asphaltite-rich ore bodies at Temple Mountain, Emery County, Utah (Hawley), 1339
Origin of crystalline magnesite deposits (Martin), 1338
Origin of thucholite (Hoekstra and Fuchs), 1716
Origin of uranium-vanadium deposits in the Lisbon Valley area, San Juan County, Utah (Kennedy), 1339
Oxidation of sulfide ore bodies, I. Geochemical environments in terms of Eh and pH (Sato), 928
Oxidation of sulfide ore bodies, II. Oxidation mechanisms of sulfide minerals at 25° C (Sato), 1202
Patterns to ores in layered rocks (Bain), 696
Photomicrography of the Cornwall magnetite ore body, Cornwall, Pennsylvania (Lapham), 1334
Position of the salt-water body in the Magothy (?) formation in the Cedarhurst-Woodmere area of southwestern Nassau County, Long Island, N. Y. (Lusczynski and Swarzenski), 1739
Primary mineralization of uranium-bearing "siliceous reef" veins in the Boulder batholith, Montana (Wright and Bieler), 56, 363
Quantitative geophysics applied to metallic mineral-property (e.g., iron-ore) evaluation (Pruss and Freeman), 1335

Abstracts—*Continued*
Radiochemical determination of apparent age of uranium migration in sandstone-type ore deposits (Rosholt), 1342
Rejuvenation of pitchblende in Hercynian ore deposits (Davidson), 383
Relationship between the stratigraphy and petrography of Pottsville sandstones and the occurrence of high-alumina Mercer clay (Williams), 1291
Residual characteristics of crystallates genetically associated with ore deposits (Rattigan), 1272
Role of chemical potential of sulfur in controlling mineral assemblages in sulfide deposits (Barton, Toulmin and Sims), 1336
Rotation properties of certain anisotropic ore minerals (Cameron *et al.*), 1335
Scheelite in the Precambrian gneisses of Colorado (Tweto), 1406
Some cation substitutions during the formation of phosphorite from calcite (Ames), 354
Some ore occurrences of the Mississippi Valley type in equatorial Africa (Stam), 1708
Stratigraphy of the eastern Mesabi district, Minnesota (Gundersen), 1004
Structural control and localization of gold-bearing lodes, Kolar gold field, India (Narayanaswami, Ziauddin, and Ramachandra), 1429
Structure and stratigraphy of the manganese deposits of Visakhapatnam and Srikakulam districts, India (Krishna Rao), 827
Studies of primary fluid inclusions in sphalerite crystals from the OH vein, Creede, Colorado (Roedder), 1337
Sulfur isotope fractionation in sulfide mineralization (Gavelin, Parwel, and Ryhage), 510
Sulfur isotope geology of vein-type and sandstone-type uranium deposits (Field and Jensen), 1329
Sulfur isotope investigation of the gold-quartz deposits of the Yellowknife district (Wanless, Boyle, Lowdon), 1592
Sulfur isotopes and ore deposits (Ault and Kulp), 73
Sulfur isotopes and the origin of the sulfide deposits of the Bathurst-Newcastle area of northern New Brunswick (Tupper), 1676
Sulfur mud deposit formed through bacterial transformation of fumarolic hydrogen sulfide (Ljunggren), 531
Supergene alteration of zinc and lead deposits in limestone (Takahashi), 1084
Synthetic and natural phases in the system Au-Ag-Te (Markham), 1148
Abstracts—*Continued*
Ternary system Ag_2S-Bi_2S_3-PbS (Van Hook), 759
Thompson-Noak Lake nickel belt Wilson and Brisbin), 1327
Thorium, uranium, and zirconium concentrations in bauxite (Adams and Richardson), 1653
Time-space relationships of the ores at Creede, Colorado (Bethke, Barton, and Bodine), 1336
Uranium deposits of the southern part of the San Juan basin, New Mexico (Hilpert and Moench), 430
Acanthite, 762
Actinolite, 1021, 1185, 1186, 1194
Adams, J. A. S., and Richardson, K. A., *Thorium, uranium, and zirconium concentrations in bauxite*, 1653–1675
communication by, 1050
Adams, J. A. S., and Weaver, C. E., on shale, 411, 1660
Adams, J. A. S., Osmund, J. K., and Rogers, J. J. W., on Th : U ratios, 1661
Adams, J. A. S., Richardson, J. E., and Templeton, C. C., on bauxites, 1658
on Th and U, 1060
Adirondacks, garnet deposits, N. Y., 258
geology, 255
Adler, I., and Axelrod, J. M. on deviation from intensity ratio, 745
Aegyrite, 734
Aerial magnetic prospecting, East Tintic district, Utah, 1518
Aerial surveys, magnetic survey, Garon Lake, Que., 338, 342
Africa, Some ore occurrences of the Mississippi Valley type in equatorial (Stam), 1708
terra rossa, radioactivity, 1655
Agard, J., on carbonatites, 734
Age of mineralization (years), conglomerates, Blind River, Ont., 660, 674, 686, 692
garnet, Adirondacks, N. Y., 267
lead, Coeur d'Alene, Idaho, 645, 650, 652, 655, 657
manganese deposits, India, 834
monazite, Idaho, 1200
scheelite, Colo.-Wyo., 1424
sulfides, Bathurst-Newcastle area, New Brunswick, 1677, 1701, 1705
west equatorial Africa, 1710
Temiscamie iron formation, 313, 321
thucholite in pegmatite, 1731, 1732
uraninite, Shinarump sediments, Arizona, 146
uranium, Blind River, Ont., 919, 921, 922
deposits in sandstone (abstract), 1332
migration in sandstone, radiochemical determination (abstract), 1342
Hercynian granites, Europe, 384

Agnew, A. F., on Upper Miss. Valley zinc-lead district, 1087
Agrinier, H., on niobium determination, 744
Aguilera, N. H., and Jackson, M. L., on clay minerals, 152
Ahlfeld, F., on granodiorite, Bolivia, 1280
on Uncia-Llallagua tin deposits, Bolivia, 1501
on volcanics, 224
Ahrens, L. H., on La^{138}, 1548
Ahrens, L. H., *et al.*, review of book edited by, 1571
Aitken, J. M., on metamorphic rocks, Conn., 112
Alabama, manganese oxides, 15
Alaska, Metallization and post-mineral hypogene argillization, Lost River tin mine (Sainsbury), 1478
cassiterite, inclusions, 493, 504
Kennecott district, sulfur isotopes, 1687
Albite, 1752
Albitization, 911, 913
Albritton, C. C., Jr., *et al.*, on Goodsprings district, Nev., 1086
Aldrich, L. T., and Wetherell, G. W., on potassium, 1679
Aldrich, L. T., *et al.*, on Pikes Peak granite, Colo., 1424
Aldrich, L. T., Wetherill, G. W., and Davis, G. L., on granites, 1424
Alexandrov, E. A., communication by, 401
review by, 1566
Algae, Biwabik formation, Minnesota, 1022
reefs, Jefferson City mine, Tenn., 996
structures in taconite, 572
(Algoma) uranium ores and their origin, Comments regarding the Blind River (Joubin), 1751
Alimarin, I. P., and Podvalnoya, R. L., on niobium determination, 744
Allanite, 1186, 1187, 1195, 1732
Allen, A. O., on hydrogen peroxide, 1736
Allen, E. T., Crenshaw, J. L., and Merwin, H. E., on marcasite, 595
Allen, V. T., abstract by, 1338
on basalt, 1656
on ilmenite, 1064
Allen, V. T., and Fahey, J. J., on pyroxene, 1251
Allgeir, R. J., Hafford, B. C., and Juday, C., on Eh of sediments, 930, 938
Alluvium, prospecting, U.S.S.R. (review), 1071
Almela, A., on Givetian limestone, Spain, 1288
Almond, Hy and Morris, H. T., on Tintic district, Utah, 1513
on zinc and lead, 1124
Alpher, R. A., and Herman, R. C., on lead ages, 1701
Altaite, 1171
Alteration, Blind River district, Ont., 911, 913
Boulder batholith, Mont., 57, 65, 67
Braden orebody, Chile, 864, 873, 877, 885, 899, 902, 903
Cassiar asbestos area, Brit. Columbia, 331
Coeur d'Alene district, Idaho, 647
East Tintic district, Utah, 1512, 1515, 1523, 1532
Garon Lake sulfide area, Que., 338, 349, 350
gneisses, Tarryall Springs district, Colorado, 1415
ilmenite (discussion), 1064
ilmenite in clays, Md. (discussion), 618
intrusives, New Mexico, 1251
Kalgoorlie gold field, Western Australia, 1162
Kolar gold district, India, 1448
Lost River tin mine, Alaska, Greisenization, 1478, 1483, 1485
magnetite deposit, Cornwall, Pa. (abstract), 1334
metalliferous veins and alteration, 1245, 1251, 1260, 1264
Morococha district, Peru, 964, 983, 984
Morrison deposits, New Mexico (discussion), 1758
ore districts, Bolivia, 223, 251, 592, 596
quartz lenses, Yellowknife district, N.W.T., 1596, 1605, 1608
rocks, engineering geology (review), 1318
sandstone, Silver Reef, Utah (communication), 836
Tintic district, Utah, 1122, 1134, 1136, 1142, 1143
U.S.S.R., Chatkalsk-Kuraminsk Mtns. (review), 849
uranium deposits, France, 385
Pronto area, Ont. (abstract), 1332
Utah, North Tintic district (abstract), 1341
Alteration of zinc and lead deposits in limestone, Supergene (Takahashi), 1083
Altschuler, Z. S., Clarke, R. S., Jr., and Young, E. J., on uranium, 354
Aluminum, radioactivity of metal (communication), 1060, 1061
Alunite, 155, 172, 252, 253, 580
Amblygonite, 490, 504
Ambrosia Lake uranium district, New Mexico, 454, 460
America, Anglo-America (review), 209
American base-metal sulfide ores, Nickel, cobalt, copper, zinc, lead, and sulfur contents of some North (Kilburn), 115
Ames, L. L., Jr., *Some cation substitutions during the formation of phosphorite from calcite*, 354–362
on phosphorite, 354
Ames, L. L., and Sand, L. B., on montmorillonites, 155

Ames, L. L., Jr., McHenry, J. R., and Honstead, J. F., on apatite, 354
Ames, R. L., and Cotton, J. E., books received, 855, 1319, 1572
Amesite, 157
Amethyst, 368
Amosite, 631
Amphibolite, 614
  Idaho, 1181
Amstutz, G. C., reviews by, 1072, 1765
Anatase, 618
Ancylite, 1189
Andel, Tj. H. van, on post-depositional alteration, 1759
Anderson, A. L., *Genetic aspects of the monazite and columbium-bearing rutile deposits in northern Lemhi County, Idaho*, 1179–1201
  on rutile mineralization, Idaho, 1180
  on sulfides, 1204
Anderson, C. A., on alteration, 1479
Anderson, C. G., on bacteria, 536
Anderson, E. M., on faulting, 972
  on faults, 233
Andorite, 581, 600
Andradite, 1024
Anglesite, 521, 1101, 1102
Anglo-America (review), 209
Angola, Mavoio sulfide deposit, 1713
Anhydrite, 85, 98, 516, 892, 967, 978, 979, 981
Ankerite, 316, 889, 891
Annell, C., spectroscopic analyses by, 1333
Annotated Bibliography of Economic Geology, history, ii, iv
Anthracite, metamorphism, 1718
Antigorite, 331, 332
Antimony, Arkansas, zoning of vein deposits (communication), 1551
Antiquity, pozzolan cement, 637
Antlerite, 1213
Apatite, 262, 354, 493, 494, 502, 735, 1186, 1188, 1195
Aplites, 62, 64, 1279
Aragonite, 632
Araucarioxylon, coalification, 1039
Arctic, Quaternary, Soviet Arctic (review), 1570
Argall, G. O. Jr., on scheelite, 1421
Argentite, 366, 759, 768, 782
  oxidation electrode potential, Cobalt, Ont., 1220
Argillization, Lost River tin mine, Alaska, Metallization and post-mineral hypogene (Sainsbury), 1478
  East Tintic district, Utah, 1135, 1137
Arizona, Chalcopyrite blebs in sphalerite at Johnson Camp (Baker), 387
  Compositional variation of alkali feldspars in some intrusive rocks near Globe-Miami (Kuellmer), 557
  Detrital-appearing uraninite grains in the Shinarump member of the Chinle formation in (Petersen), 138
Arizona—Continued
  asbestos, 631
  Magma copper mine, oxidation study, 933
  manganese oxides, 18, 25, 30, 32, 35, 42
  mining districts having intrusive aplanites, 1626
  mining history (review), 418
  sulfides, mill feed samples, 117
  sulfur isotopic ratios, 87
  sulfides and sulfates, sulfur isotopic deviations, 521
  thucholite, 1720
Arizonite, 1037, 1064, 1068
  ilmenite alteration to "arizonite" (discussion), 843
  Malaya, ilmenite *vs.* arizonite (discussion), 1068
Arkansas, bauxites, Th : U ratios, 1662, 1663
  titanium-columbium mineralogy (discussion), 1313
  gold and silver in manganese, Polk Co. (communication), 1757
  manganese oxides, 39
  Sugar Stick, 16
Arkhangel'sky, A. D., on gibbsite, 1286
Arnold, R. G., on FeS, 1349
  on sphalerite formation, 825
  on sulfides, 554
Arsenic, trace element in supergene minerals of As, 1112
Arsenides, iron, 1351
Arsenoferrite, 1350
Arsenopyrite, 514, 516, 575, 1177, 1346, 1348, 1353, 1355, 1363, 1369, 1374, 1381, 1448, 1602, 1632, 1637, 1697
  gold content, 1646
Artillery Peak manganese district, Ariz., 30, 33, 38
Asbestos, 630
  Newfoundland, Baie Verte chrysotile deposit (communication), 399
Asbestos in the Cassiar asbestos deposit, northern British Columbia, Genesis of chrysotile (Gabrielse), 327
Åsen sulfide district, Sweden, sulfur isotopes, 523
Asensio, I., and Sabatier, G., on arsenopyrite, 1354
Ash, smelter, rhenium content, (communication), 609
  thucholite ash, 1721, 1723, 1734, 1735
Asphaltite, Utah, Temple Mtn. uranium deposit (abstract), 1339
Assays, copper-lead ore, Mindouli deposit, French Equatorial Africa, 1712
  gold, Kalgoorlie, Western Australia, 1175
  uranium ores, Blind River, Ont., 684
Aten, A. H. W., on Bi-Bi_2S_3 compositions, 765

Athabasca bituminous sands, A geochemical investigation of the (Champlin and Dunning), 797
Atlas, U.S.S.R., volcanoes (review), 851
Atomic substitution, arsenopyrite, 1354
  silver for gold in calaverite, 1157
Ault, W., on sulfur isotope fractionation, 521
Ault, W. U., and Kulp, J. L., *Sulfur isotopes and ore deposits*, 73–100
  on sulfur isotope analysis, 649
  on sulfur isotopes, 1597
Austin, S. R., discussion by, 1758
Australia, cassiterite, inclusions, 492
  davidite, 1542, 1544
  tin, acid rocks and tin deposits, 1278
  Western Australia, gold, Kalgoorlie, telluride minerals, 1162
  tellurides, Kalgoorlie, 1461
Autoradiographs, hematite-chlorite rock, (Saskatchewan (communication), 1304
  siliceous reefs, Mont., 374
  uraninite—thucholite, 1724, 1725
Avdzeiko, G. V., on pitchblende, 384
Axinite, 491
Azurite, 891, 897

Baas Becking, L. G. M., and Kaplan, I. R., on oxidation potentials, 930
Bacon, A., and Milner, G. W. C., on niobium, 744
Bacon, L. O., and Wyble, D. O., on gravity prospecting, 466
Bacteria, copper precipitation, Northern Rhodesia, 813
  sulfur bacteria, Guatemala, 536
  sulfur isotope fractionation, 1686
  sulfur isotopes, reduction in uranium deposits (abstract), 1329
Bacterial transformation of fumarolic hydrogen sulfide, A sulfur mud deposit formed through (Ljunggren), 531
Bagley, P. C., review of book by, 417
Bailey, R. K., on talc, 154
Bailey, S. W., and Cameron, E. N., on ilmenite, 1064
Bailey, S. W., and Tyler, S. A., *Clay minerals associated with the Lake Superior iron ores*, 150–175
Bailey, S. W., *et al.*, on ilmenite, 1064
Bain, G. W., *Patterns to ores in layered rocks*, 695–731
  on a paleo-stream channel, Blind River, Ont., 718
  on Shinarump deposits, 142
  on sulfides, 1204
  review of book by, 620
Bain, H. F., on Bellah mine, Ark., 1552
Baker, A. A., *et al.*, on Precambrian, Utah, 1126
Baker, A., III, *Chalcopyrite blebs in sphalerite at Johnson Camp, Arizona*, 387–398
  on blebs in ores, 387
Baker, G., on krennerite, 1169
Balk, R., on Gore Mtn. area, N. Y., 255
Balls of kaolinite, 1394
Bannerman, H. M., Secretary's report to the S.E.G., 1581
Bannister, F. A., and Horne, J. E. T., on davidite, 1034
  on a radioactive mineral, 1542
Barb, W. G., *et al.*, on hydrogen peroxide, 948
Bárdossy, Gy, and Bárdossy, S. L., on bauxites, 619
Barite, 47, 49, 73, 97, 367, 523, 631, 892, 1190, 1191, 1195
Barlow, A. E., Faribault, E. R., and Gwillim, J. C., on Mistassini group, Quebec, 315
Barnes, V. E., and Romberg, F., on gravity prospecting for iron ore, 466
Barnes, V. E., *et al.*, review of bulletin, 1074
Baroch, C. T., on yttrium, 1554
Barringer, A. R., on resin insets, 191
Barsukov, V., on cassiterite, 1500
Barth, T. F. W., on ionic percentages, 271
  on oxygen ions, 1491
Barth, T. F. W., *et al.*, review of journal edited by, 1765
Barthauer, G. L., Rulfs, C. L., and Pearce, D. W., on thucholites, 1720
Bartholomé, P., *Genesis of the Gore Mountain garnet deposit, New York*, 255–277
  on Gore Mtn. area, N. Y., 255
Barton, P. B., Jr., on uranium, Goodsprings district, Nev., 1086
Barton, P. B., Jr., and Behre, C. H., Jr., on Goodsprings district, Nev., 1086
Barton, P. B., and Kullerud, G., on sphalerite geothermometer, 818
Barton, P. B., Jr., Toulmin, P., III, and Sims, P. K., abstract by, 1336
Barton, W. R., on rubidium, 1554
Basalt, bauxitic parent rocks, 1656
Bastin, E. S., on Upper Miss. Valley zinc-lead district, 1087
Bastite, 332
Bastnaesite, 1189, 1190
Bateman, A. M., *Waldemar Lindgren—and Economic Geology*, i–ii
  on alkali feldspar, 561
  on bauxite, 1285
  on Bisbee area, Ariz., 935
  on Rhodesian copperbelt, 810
  on talc, 154
Bateman, A. M., and Jensen, M. L., on digentite, 814
  on sulfides, 513
Bateman, J. D., on Giant Yellowknife mine, N.W.T., 1593
Bateman, P. C., on tactites, 1411
Bates, T. F., and Mink, J. F., on antigorite, 335

Batholith, Montana, Primary mineralization of uranium-bearing "siliceous reef" veins in the Boulder (Wright and Bieler), 56, 363
Batholiths, granites and ore deposits, 1277
Idaho batholith, blacksand mineral provenance, 789, 792
Bathurst-Newcastle area of northern New Brunswick, Sulfur isotopes and the origin of the sulfide deposits of the (Tupper), 1676
Bauxite, Thorium, uranium, and zirconium concentrations in (Adams and Richardson), 1653
Arkansas, columbium content (discussion), 1313
Europe, clay minerals in deposits (abstract), 1338
thorium and uranium, red mud content (communication), 1060
titanium minerals (discussion), 618
Bauxite deposit in the Paleozoic of Leon, Spain (Font-Altaba and Closas, M.), 1285
Beaches, mineral deposits on beaches, 700
placers, 793
Beaches and coasts (review), 1071
Bearden, J. A., on alpha activities, 1062
Beaverlodge uranium area, structural history, Saskatchewan (discussion), 617
Becraft, G. E., on uranium, 59
Beegerite, 762, 785
Beggiatoa, sulfur bacteria, Guatemala, 536
Behre, C. H., Jr., Scott, E. R., and Banfield, A. F., on Upper Miss. Valley lead-zinc district, 1087
Bell, O. G., on kaolinite, 1393
Belser, C., on scheelite, Colo., 1407
Belt, C. B., Jr., *Intrusion and ore deposition in New Mexico*, 1244–1271
Bemmelen, R. W. van, on hornfels, 1656
Benson, D., *Application of the sphalerite geothermometer to some northern New Brunswick sulfide deposits*, 818–826
Benson, W. T., on manganese oxide, 36
Bentonite, 635
Berek, M., on a slit photometer, 1306
Berg, L., on bauxites, Urals, 1289
Bergeron, R., on Mistassini series, Quebec, 315
Bernfield, I. D., on sulfides, 1205
Berry, E. W., on Ordovician, Bolivia, 220
Berry, L. G., on atomic structure of calaverite, 1156
on lillianite, 762
Bertaut, E. F., on structure FeS, 1349
Bertrandite, 1413
Beryl, 490, 496, 501
Colorado, Boomer deposit, 1413, 1420
U.S.S.R., geochemistry and deposits (review), 1570
Beryllium, geochemistry and Be deposits (review), 1570
Betafite, 733
Betekhtin, A. G., communication on periodical edited by, 401
Bethke, P. M., Barton, P. B., Jr., and Bodine, M. W., Jr, abstract by, 1336
Beus, A. A., review of book by, 1570
Beutell, A., on arsenopyrite, 1353
Beutell, A., and Lorenz, Fr., on tube-in-tube technique, 1356
Bibliographies, Blind River uranium area, Ont., 693
clay minerals, 167
gems, North America (review), 1073
manganese oxide deposits, 53
Nsuta, Ghana, 309
minerals, New Mexico (review), 1074
niobium prospecting by x-ray methods, Congo, 755
ore deposits, central Bolivia, 604
oxidation of sulfide ores, 959
pitchblende, Hercynian deposits, Europe, 386
Siberia, geological investigations (review), 852
system Au-Ag-Te, 1475
thucholite, 1737
uranium deposits, San Juan basin, New Mexico, 463
Bichan, W. J., communication by, 399
on structure, Kolar gold field, India, 1433
Bieler, B. H., with Wright, H. D., *Primary mineralization of uranium-bearing "siliceous reef" veins in the Boulder batholith, Montana*, 56, 363
Billings, M. P., on faults, 233
on pebbles, 793
Billingsley, P., on North Lily area, Utah, 1121
Billingsley, P., and Crane, G. W., on ore, Tintic district, Utah, 1122
on zoning, 1511
Billingsley, P., and Grimes, J. A., on Boulder batholith, Mont., 59
Billingsley, P., and Locke, A., on mineralization, Tintic, Utah, 730
Biogeochemistry, textbook, reprint of V. I. Vernadskii's book (review), 1315
Biotite, 66, 68, 265, 322, 324, 864, 891, 902, 1009, 1184, 1186, 1194
Birks, L. S., and Brooks, E. J., on x-ray spectrometers, 755
Birnessite, 10
Bisbee copper district, Arizona, oxidation study, 935
sulfides and sulfates, sulfur isotopic deviations, 521
Bishop, F. W., on kaolinitic sediments, Fla., 1383
Bishop, M. S., review of book by, 1317
Bishopp, D. W., and Hughes, W. J., on manganese, 280
Bismuth, system Ag_2S-Bi_2S_3-PbS, 759
Bismuthinite, 580, 600, 762
Bitumens, metamorphism, 1718

Bituminous sands, A geochemical investigation of the Athabasca (Champlin and Dunning), 797
Bixbyite, 11, 299
Black earth (terre noire) ore, 1712
Blacksands, Nature and origin of central Idaho (Savage), 789
Blanchard, R., and Boswell, P. F., on oxidation products, 1204
Blatchford, A., on Vatukoula gold field, Fiji, 1466
Blebs in sphalerite at Johnson Camp, Arizona, Chalcopyrite (Baker), 387
Blind River uraniferous conglomerates, Ontario (discussion), 410
Blind River uranium deposits, Evidence of the origin of the (Derry), 906
Blind River uranium district, Ontario, 718; (review), 1074
Blind River uranium ores and their origin (Robertson and Steenland), 659
Comments regarding the (Joubin), 1751
Block diagrams, Wickes district, Mont., 58
Bloem, J., and Kröger, F. A., on system PbS, 764
Blumer, M., on pH, 929
Bobrievich, A. P., review of book by, 1569
Boehmite, 1285
Boliden sulfide deposit, Sweden, sulfur isotope abundances, 514
Bolivia, Comparative study of major ore deposits of central (Turneaure), 217, 574
cassiterite, inclusions, 491, 493, 494, 504
manganese, Uncia area, 44
tin, acid rocks and tin deposits, 1279
Uncia-Llallagua deposits, mineralization, 1501
Bonchevite, 762
Books received, 209, 418, 622, 855, 1075, 1319, 1572
Boomer beryl deposit, Colo., 1413
Borates, California, 632
Borchert, H., on krennerite, 1159
Borgström, L. H., on arsenopyrite, 1353
Borings, Blind River basin, Ont., 661, 671, 685
Cedarhurst-Woodmere area, Long Island, N. Y., 1742
East Tintic district, Utah, 1138, 1141, 1145
Mesabi Range, Minnesota, 1014
New Zealand, geothermal waters, 1688
Borneman-Starinkevitch, I. D., on apatite, 355
Bornite, 87, 387, 392, 393, 404, 608, 711, 811, 889, 899
Boron, 632
Borovsky, I. B., and Gerasimovsky, V. I., on monazite, 1545
Boston, Mass., topographical history, (review), 620
Boswell, P. F., and Blanchard, R., on oxidation products, 1204
Bott, M. H. P., and Masson-Smith, D., on gravity survey, Pennines, England, 205
Botts, S. D., analyses by, 1492
Boulder batholith, Montana, Primary mineralization of uranium-bearing "siliceous reef" veins in the (Wright and Bieler), 56, 363
Bournonite, 1177
Bourret, W., on ilmenite, Allard Lake, Que., 641
Boutwell, J. M., on fractures, 245
on Park City intrusive, Utah, 1625
Bowen, N. L., on magmatic fluids, 598
Bowen, N. L., and Tuttle, O. F., on orthoclase, 64
on serpentine, 155
Bowie, S. H. U., on thucholite, 1720
Bowie, S. H. U., and Taylor, K., on photo cells, 1306
Boydell, H. C., on colloids, 631
Boyle, R. W., discussion by, 840
on Giant Yellowknife mine, N.W.T., 1593
on lead isotopes, 1691
Boyle, R. W., with Wanless, R. K., and Lowdon, J. A., *Sulfur isotope investigation of the gold-quartz deposits of the Yellowknife district*, 1591
Boynton, R. S., and Gutschick, K. A., on lime, 637
Braden orebody, Chile, South America, Geology of the (Howell and Molloy), 863
Bradley, W. F., and Weaver, C. E., on chlorite, 164
Bradley, W. F., Grimm, R. E., and Clark, G. F., on clay minerals, 634
Bradley, W. H., review of festschrift for, 1766
Bragg, W. L., on pyrite, 1349
Brajnikov, B., on petrologic calculation, 1491
Brannerite, 680, 682, 906, 919, 924, 1754
Brant, A. A., on iron-ore prospecting, 466
Braunite, 11
Brazil, arsenopyrite, Morro Velho mine, 1644
cassiterite, inclusions, 490
gold, Serra de Jacobina deposit (review), 1074
lithiophorite, Merid mine, Minas Gerais, 299
niobium, Barreiro deposits, 738, 740, 742
Breccia, Braden copper area, Chile, 874, 879
East Tintic district, Utah, 1144
Georgia, Pleasant Hill (discussion), 615
Grandview scheelite mine, Colo., 1421
hydrothermal deposits and pebble columns (abstract), 1334
Jefferson City district, Tenn., 985, 986, 993, 996
microbrecciation of jasperoids, Utah, 1516

Breccia—*Continued*
Morococha district, Peru, 981, 983
ore districts, Bolivia, 223, 229, 250, 582, 591, 593, 598
Queensland, Mt. Isa lead-zinc mine (discussion), 616
reef breccias, Yauricocha sulfide deposit, Peru (discussion), 1070
vein breccia, Mont., 369, 374
Brecciation, ore deposits, Bolivia, 593
Breger, I. A., on coalified wood, 1039
Breger, I. A. and Chandler, J. C., *Extractability of humic acid from coalified logs as a guide to temperatures in Colorado Plateau sediments*, 1039–1947
Breger, I. A., and Deul, M., on uranium, 1716
Breger, I. A., Deul, M., and Meyrowitz, R., on uranyl ion, 1039
Breger, I. A., Deul, M., and Rubinstein, S., on uranium, 1039
Breithaupt, A., on nacrite, 156
Breurich, S. V., on sediments, 930
Brewster, D., on inclusions, 497
Bridge, J., on Cambro-Orodovician, Tenn., 989
on lead-zinc, southern Appalachian district, 1088
Bridge, J., and Goldich, S. S., on volcanics, 1656
Brindley, G. W., on clay minerals, 634
on hydrated halloysite, 1286
Brindley, G. W., and Knorring, O. von, on serpentine, 158
Brines, bromine content, 633
strontium content, Ohio, 180
Brison, R. J., on resin insets, 191
British Columbia, Genesis of chrysotile asbestos in the Cassiar asbestos deposit, northern (Gabrielse), 327
lead isotope ratios, 653, 654
sulfides, mill feed sample, 117
Brochantite, 521, 982, 1213
Broderick, T. M., on Biwabik iron formation, Minn., 1005
Brögger, W. C., on corona garnet, 268
on pegmatite zoning, 639
Brokaw, A. L., abstract by, 1326
on lead-zinc, southern Appalachian district, 1088
Brokaw, A. L., and Jones, C. L., on fractures, 987
Bromine, 633
Brookite, 618
Brophy, G. P., abstract of paper by, 1325
Brotzen, O., on uranium, 925
Brown, B. E., and Jackson, M. L., on chlorite, 161
Brown, C. E. G., and Dadson, A. S., on Giant Yellowknife mine, N.W.T., 1593
Brown, C. E. G., Dadson, A. S., and Wrigglesworth, L. A., on Giant Yellowknife mine, N.W.T., 1593
Brown, G., on cookeite, 162
Brown, J. S., abstract by, 1330
Brown, L. G., on kaolinization, 1499
Browning, W. C., and Snow, F. W., on Magma mine, Ariz., 933
Brüggen, J., on Braden copper deposit, Chile, 865
on Caracoles tuff, Bolivia, 222
Brujewicz, S. W., on Eh of sea waters, 930
Bruninx, E., on niobium determination, 744
Bryan, K., on Hot Springs area, Ark., 39
Bryner, L., abstract by, 1334
Buddington, A. F., on copper, 1280
on geology, Adirondack Mtns., N. Y., 255
on xenothermal ore deposits, 603
Buddington, A. F., Fahey, J., and Vlisidis, A., on exsolution, 266
Buehler, H. A., and Gottschalk, V. H., on sulfides, 1204
Buerger, M. J., on loellingite structure, 1350
on sulfide structures, 760
Buerger, N. W., on sphalerite, 395
Bulah, A. S., and Kahn, O. A., on sulfides, 1206
Burbank, W. S., on alteration, 1479
on San Juan volcanics, Colo., 1425
on sericite, 596
Burchard, E. F., on shale, 1656
Burdon, D. J., on petrology, Kolar gold field, India, 1433
Burg, G., on gold, 1646
Burgin area discoveries, East Tintic district, Utah, Chief Oxide; A case history Part I (Lovering and Morris), 1116; Part II (Bush and Cook), 1607
Burrows, W., and Gordon, T. C., on Eh of soils, 930
Bush, J. B., and Cook, D. R., *The Chief Oxide-Burgin area discoveries, East Tintic district, Utah; A case history. Part II. Bear Creek Mining Company studies and exploration*, 1507–1540
Butler, B. S., on orebodies, 903
on W. Lindgren, iii
Butler, B. S., and Burbank, W. S., on oxidation potentials, 929
Butler, B. S., *et al.*, on mineralization, Calumet and Hecla deposits, Mich., 730
on Precambrian, Utah, 1126
Butler, B. S., Loughlin, G. F., and Heikes, V. C., on brecciation, 594
Butler, J. R., on rare-earth minerals, 1547
Butler, J. R., and Hall, R., *Chemical characteristics of davidite*, 1541–1550
on Yt-earths, 1547
Butte, Mont., alteration, 72
Byers, A. R., on arsenopyrite, 1644
Byström, A., on pyrrhotite, 1349
Byström, A. M., on gamma-MnO_2, 300

Cadmium, supergene alteration, 1108
Cadmium hydroxide, 1109
Cady, G. H., review by, 415
Cahoon, H. P., on montmorillonites, 155
Caillère, S., and Henin, S., on kaolinite, 1396
Caillère, S., Oberlin, A., and Hénin, S., on argillic minerals, 1479
Calaverite, 1148, 1156, 1159, 1164, 1165, 1166, 1474
Calcite, 143, 252, 253, 734, 890, 953, 967, 1135, 1189, 1190, 1752, 1755
Some cation substitutions during the formation of phosphorite from (Ames), 354
black calcite, 24
California, borates, 632
coastal seas (review), 1317
gold, gravel deposits, Sierra Nevada, 697
manganese oxides, 36, 42
mining districts having intrusive aphanites, 1626
psilomelane, Imperial Co., 25
sulfides, mill feed sample, 117
Calkinsite, 1545
Cameron, E. N., on mineral rotation properties, 297
on pegmatites, 638
Cameron, E. N., *et al.*, abstract by, 1335
on pegmatites, 733
Cameron, E. N., with Sorem, R. K., *Manganese oxides and associated minerals of the Nsuta manganese deposits, Ghana, West Africa*, 278
Campbell, D. F., on silver ores, 583
Campbell, J. D., on *en echelon* ore veins, 1453
Campbell, N., on Giant mine, Yellowknife, N.W.T., 1593
Campbell, W. T., and Carl, H. F., on niobium determination, 744
Canada, cassiterite inclusions, 490
ore groups and igneous rock groups, 1275
Canning, —., analysis by, 1169
Cannon, H. L., on algae, 1002
Cannon, R. S., on lead isotope ratios, 653
Cannon, R. S., Jr., and Grimaldi, F. S., on powellite, 1411
Capdecomme, L., and Orcel, J., on photocells, 1306
Carbon dioxide, occurrence in inclusions, 495
Carbonates, 1135, 1140
black carbonate, 47
manganese carbonates, Burgin mine, Utah, 1534
sulfur isotopic ratios, Yellowknife, N.W.T., 1609
Carbonatites, rutile deposit similarities, Idaho, 1180, 1184
Carbonatites by x-ray methods, Geochemical prospecting and appraisal of niobium-bearing (Van Wambeke), 732
Carburan, 1717
Carmichael, F., on sulfides, 1205
Carnotite, 446
Carroll, D., discussion by, 618
discussion of article by, 1758
Cassiar asbestos deposit, northern British Columbia, Genesis of chrysotile asbestos in the (Gabrielse), 327
Cassiterite, 218, 252, 579, 582, 594, 599, 607, 1279, 1482, 1484, 1498, 1500
Cassiterite and associated minerals, Inclusions in (Little), 485
Cation substitutions during the formation of phosphorite from calcite, Some (Ames), 354
Cathcart, J. B., *et al.*, on kaolinite, 1396
Cavanagh, —., on niobium determination, 744
Caves, breccias, Jefferson City mine, Tenn., 998
Cavities, Berg Aukas zinc mine, South West Africa (discussion), 845
Cedarhurst-Woodmere area of southwestern Nassau County, Long Island, N. Y., Position of the salt-water body in the Magothy (?) formation in the (Lusczynski and Swarzenski, 1739
Celestite, 48, 180, 632
Cerium, carbonatite deposits, Congo, 738
Cerium-earth thucholites, 1727
Cerussite, 1086, 1100, 1102, 1106, 1107, 1110, 1534, 1535
Cesarolite, 12
Chace, F. M., on mineral abbreviations, 1347
on San Pedro stock, Bolivia, 229
on tin veins, Bolivia, 1280
Chalcanthite, 892
Chalcedony, 143
Chalcocite, 404, 406, 409, 521, 608, 711, 888, 897, 1203, 1205, 1209, 1212, 1214, 1314, 1712
Chalcophanite, 13, 1522
Chalcophyllite, 892
Chalcopyrite, 78, 85, 350, 404, 514, 516, 546, 549, 607, 662, 672, 682, 823, 889, 894, 899, 981, 1175, 1176, 1193, 1314, 1325, 1336, 1464, 1552, 1553, 1604, 1693, 1701, 1712, 1755
Chalcopyrite blebs in sphalerite at Johnson Camp, Arizona (Baker), 387
Chalcotrichite, 890
Chamberlain, J. A., reply to a discussion of a paper by, 617
Champaign County, Ohio, Occurrence of strontium in the surface and ground waters of (Feulner and Hubble), 176
Champlin, J. B. F., and Dunning, H. N., *A geochemical investigation of the Athabasca bituminous sands*, 797–804
Chandler, J. C., with Breger, I. A., *Extractability of humic acid from coalified logs as a guide to temperatures in Colorado Plateau sediments*, 1039

Chapman, C. A., and Schweitzer, G. K., on oxidation potentials, 929
Chapman, E. P., and Stevens, R. D., on galena, 776
Chayes, F., on a point count, 1635
on modal analysis, 1247
Chemical analyses, alumina and magnesia in iron ore, Lake Superior, 166
arsenopyrite, 1638
synthetic, 1633
bauxite, Spain, 1285, 1286
calaverite, 1166
coalified logs and coal, 1041
copper and zinc in rocks, 1247, 1252, 1260, 1265
davidites, 1030, 1544
gold-silver tellurides, 1157
kaolinite, Putnam Co., Florida, 1384
manganese oxides, 14, 21, 25, 29, 32, 41, 44
molybdenite, rhenium content, U.S.S.R. (communication), 607
niobium, 744
rocks, altered rocks, Mont., 69
Barton garnet mine, N. Y., 269
rocks and greisen, Lost River tin mine, Alaska, 1492
serpentinites, Brit. Columbia, 332
strontium, Champaign Co., Ohio, 181
sulfides ores, 119
sylvanite, Fiji, 1469
telluride minerals, 1169, 1170, 1171, 1173
Temiscamie iron-formation, Quebec, 319
tetrahedrite-chalcopyrite, 1176
thucholites, 1720, 1723
uraninite, Ont., 680, 1726
viterbite, Braden, Chile, 892
water, chloride concentration, 1745
Lake Ixpaco, Guatemala, 535
Chemical characteristics of davidite (Butler and Hall), 1541
Chemistry, alteration, Alaska, 1491
Montana, 69, 379
garnet ores and rocks, Gore Mtn., N. Y., 271
gold, solubility in zone of oxidation, U.S.S.R. (review), 1761
iron formation, Mistassini district, Quebec, 320
lead isotope fractionation (discussion), 840
physical-chemistry crystallography (review), 850
thorium-uranium concentration by milling bauxite, 1667
uranium migration in sandstone (abstract), 1342
waters and vapors, Lake Ixpaco, Guatemala, 535
Chemistry of the earth (review), 1571
Chenoweth, W. L., on zircon, 142
Chert, 316, 566
Jefferson City mine, Tenn., 1000
Chief Oxide-Burgin area discoveries, East Tintic district, Utah; A case history. Part I (Lovering and Morris), 1116; Part II (Bush and Cook), 1507
Chihuahua, sulfur isotopes, Parral area, 1687
Chikashige, M., and Saito, I., on system Ag-Te, 1149
Chile, South America, Geology of the Braden orebody (Howell and Molloy), 863
Chimneys, ore districts, Bolivia, 250
China, Comunist, beryllium deposits (review), 1571
stratigraphy (review), 1760
Chinle formation in northern Arizona, Detrital-appearing uraninite grains in the Shinarump member of the (Petersen), 138
Chlorite, 158, 160, 171, 252, 253, 596, 689, 891, 1188, 1300, 1728, 1733, 1737
Choubert, B., Stephane, H., and Betremieux, R., on iron, 1289
Chow, T. J., and Thompson, T. G., on strontium, 180
Chromite, basic rocks and chromite deposits, 1281
Chromium, minor element in Phosphoria formation (Idaho), 1333
Chrysocolla, 892, 897
Chrysotile, Newfoundland, Baie Verte deposits (communication), 399
Chrysotile asbestos in the Cassiar asbestos deposit, northern British Columbia, Genesis of (Gabrielse), 327
Cinnabar, 1551, 1553
Claisse, F., on x-ray analysis, 750
Claringbull, G. F., on nacrite, 156
Clark, K. A., on oil, 798
Clark, L. A., *The Fe-As-S system: Phase relations and applications*, 1345–1381; 1631–1652
on system Fe-As-S, 1367
Clark, —, and Duane, —, on davidite, 1035
Clarke, F. W., on barium, 632
on fumarolic deposition, 1503
on water, 950
Clarke, J. W., on "charnokites," Ga., 615
Clarke, R. S., Jr., and Altschuler, Z. S., on uranium, 355
Clavos, 250
Clay, Relationship between the stratigraphy and petrography of Pottsville sandstones and the occurrence of high-alumina Mercer (Williams), 1291
Clay minerals, bauxite deposits, clay mineral content, Europe (abstract), 1338
Braden copper district, Chile, 891
Lost River tin mine, Alaska, 1478, 1489, 1500
sulfurous mud deposit, Guatemala, 534
temperature indicators, 70
thermal analysis, endothermic peaks, 1288

Clay minerals associated with the Lake Superior iron ores (Bailey and Tyler), 150
Clays, 634
Florida, kaolinitic sediments, 1382
ilmenite alteration in clays, Md. (discussion), 618
manganese oxide deposits, U.S., 7
Spain, Portilla de Luna deposit, 1288
Clayton, R. N., and Epstein, S., on oxygen isotopes, 77
Clinochore, 157
Clinozoisite, 1416
Closas M., J., on iron, 1289
Closas M., J., with Font-Altaba, M., *A bauxite deposit in the Paleozoic of Leon, Spain*, 1285
Cloud, P. E., Jr., and Barnes, V. E., on limestone alteration, 1000
Coal, Kentucky, chemical analysis, 1040, 1041
metamorphism, 1718, 1719
New Zealand (review), 415
U.S.S.R., Yakutia (review), 851
Coalified logs as a guide to temperatures in Colorado Plateau sediments, Extractability of humic acid from (Breger and Chandler), 1039
Coasts, California, off-shore region (review), 1317
Coasts and beaches (review), 1071
Cobalt, 1641
copper, zinc, lead, and sulfur content of some North American base-metal sulfide ores, Nickel (Kilburn), 115
manganese oxide content, 17, 20
ore deposits (review), 1570
Cobaltite, 672, 673, 1375, 1564
Coes, L., on topaz, 1500
Coeur d'Alene district, Idaho, Isotopic composition of lead and Precambrian mineralization of the (Long, Silverman, and Kulp), 645; discussion, 1565
Coffinite, 445
Cole, W. F., Wadsley, A. D., and Walkley, A., on gamma-MnO_2, 280
Coleman, L. C., on ore mineralogy, Yellowknife, N.W.T., 1593
on ores, Giant Yellowknife mine, N.W.T., 1643
Coleman, R. G., iron determination by, 1499
on sediments, 1046
Colemanite, 633
Collin, L. L., on davidite, 1543
Collins, C. B., *et al.*, on pitchblende, 386
Collins, G. E., on metamorphic rocks, Conn., 112
Collins, J. H., on kaolinite, 154
Collins, W. H., on Blind River area, Ont., 660, 1751
on Huronian series, Ont., 907
Colloids, clay, Florida, 1401
ore deposition, 196
Color, polarization figures of ore minerals (abstract), 1335
vein quartz, Boulder batholith, Mont., 60, 64, 364, 367, 377, 380
Colorado, Scheelite in the Precambrian gneisses of (Tweto), 1406
Central City district, mineral assemblage control by sulfur (abstract), 1336
zoning (abstract), 1328
coal, chemical analysis, 1041
copper, Jefferson, Co., geochemical prospecting (abstract), 1329
mining districts having intrusive aphanites, 1626
OH vein, mineralogy, Creede (abstract), 1336
pyrite, oxidation electrode potential, 1223
sphalerite, OH vein, Creede (abstract), 1337
spring waters, manganese oxides, 40
sulfides, sulfur isotopic ratios, 78, 83, 84, 86
sulfur isotopes, Leadville-Gilman deposit, 1687
thucholite, 1720
Colorado Mineral Belt, 1425
Colorado Plateau, sulfides, sulfur isotopic ratios, 84, 91
uranium deposits, 720
San Juan basin, 430
Colorado Plateau sediments, Extractability of humic acid from coalified logs as a guide to temperatures in (Breger and Chandler), 1039
Coloradoite, 1165, 1166, 1167, 1461, 1468, 1470
Columbite, 733
Columbium, occurrence in bauxite, Ark. (discussion), 1313
Columbium-bearing rutile deposits in northern Lemhi County, Idaho, Genetic aspects of the monazite and (Anderson), 1179
Comeforo, J. E., and Kohn, J. A., on asbestos, 631
Communications—
A geologic-profile plotter (Marsh), 201
A rapid and accurate contour interpolator (Marsh), 1555
Comments regarding ore genesis at Silver Reef, Utah (Wyman), 835
Commercial chrysotile deposits, Baie Verte, Notre Dame Bay district, Newfoundland—Preliminary notes (Bichan), 399
Contact printing of drill cores (Kelly), 1503
Geochemistry of rhenium—Addendum (Fleischer), 607
Gold and silver in manganese ore, Polk Co., Arkansas (Foley), 1757
Radioactivity of aluminum metal (Adams and Richardson), 1060

Communications—Continued
Reflectivity measurements with a Hallimond visual microphotometer (Leonard), 1306
Selenium, rubidium, and yttrium in mineral veins in Arkansas (Foley), 1553
Supplement to *Vademecum* of the Russian geological periodicals (Alexandrov), 401
Zonal arrangement of metals in hypogene veins in Arkansas (Foley), 1551
Complex inclusions, 497
Compositional variation of alkali feldspars in some intrusive rocks near Globe-Miami, Arizona (Kuellmer), 557
Compte, P., on Givetian limestone, Spain, 1288
Conglomerates, Huronian, Blind River district, Ont., 912
Michigan, Calumet & Hecla copper deposits, 697
Ontario, Blind River uranium area, 659, 667, 675, 690
uranium deposits (discussion), 1561
Pronto deposit, Ont. (abstract), 1332
ore deposits in conglomerates, 713, 718
Shinarump conglomerate, Ariz., 140, 143
uraniferous conglomerates (discussion), 410
Witwatersrand (review), 1318
uraninite distribution (discussion), 842
Congo, carbonatite, Lueshe deposits, 732
cassiterite, inclusions, Katanga, 490, 494, 504
copper, 707
sulfides, Bamba Kilenda deposit, 1713
Connally, H. J. C., on vein surface contouring, 974
Connecticut, Ground water in north-central (Cushman), 101
sulfur isotopes, Bristol area, 1687
Constantinides, G., and Batti, P., on porphyrin, 803
Constantinides, G., Arich, G., and Lomi, C., on porphyrin complexes, 803
Contour interpolator (communication), 1555
Contourpolator (communication), 1557
Cook, D. R., on map, East Tintic district, Utah, 1511
Cook, D. R., with Bush, J. B., *The Chief Oxide-Burgin area discoveries, East Tintic district, Utah; A case history*. Part II. *Bear Creek Mining Company studies and exploration*, 1507
Cook, E. F., on Pine Valley Mtn. intrusive, Utah, 836
Cooke, C. W., on kaolinitic sediments, Florida, 1383
Cooke, H. C., on asbestos, Que., 333
Cooke, H. C., James, W. F., and Mawdsley, J. B., on lamprophyres, 346
Cookeite, 162
Cooley, E. F., and Oda, U., spectroscopic analyses by, 1417
Cooper, J. R., on Johnson Camp area, Ariz., 389
on volume changes, 1491
Cooper, L. H. N., on sediments, 930
Cooper, W. G. G., on bauxite, 1656
Copper, zinc, lead, and sulfur contents of some North American base-metal sulfide ores, Nickel, cobalt (Kilburn), 115
acid rocks and copper deposits, 1280
Arizona, Globe-Miami district, intrusives and mineralization, 558
Johnson Camp, 387
Magma copper ores, oxidation, 933
Arkansas, manganese deposits, Polk Co. (communication), 1757
Chile, Braden orebody, 864
Colorado, Jefferson Co., geochemical prospecting (abstract), 1529
Tarryall Springs district, etc., 1414, 1421
East Tintic district, Utah, 1134
Kupferschiefer deposits, Germany, 704
manganese oxide, copper content, 33, 35, 47
Michigan, Calumet & Hecla conglomerate, 697
White Pine deposit (discussion), 402
New Mexico, distribution in intrusives, 1252, 1260, 1265
Northern Rhodesia, origin, 805
Ontario, Blind River area, 672
oxidation of sulfides, 1205, 1212
Quebec, Mattagami area (abstract), 1326
system Cu-Fe-S-O, corrections (discussion), 1314
Utah, East Tintic district, jasperoid deposits, 1516
Silver Reef ores, genesis (communication), 835
Virginia, Catoctin formation mineralization (abstract), 1325
Copper-zinc deposit at Garon Lake, Quebec, Discovery of a (Joklik), 338
Corbett, C. S., on oil, 803
Cordierite, 162, 163, 350, 1418
Cornwall, H. R., and Wright, J. C., on rhyolite, 407
Coronadite, 12, 46
Coronas, 265
Coronites, 257, 265
Georgia, 611, 615
Correlation, conglomerates, Blind River district, Ont., 912
Mercer coal, Pa., 1291, 1294
stratigraphy, Congo-Rhodesian mineral belt, 709
Temiscamie iron-formation, Quebec, 320
Texas and New Mexico, pre-Simpson deposits (review), 1075
uranium with trace elements in veins, Mont., 378
Cosalite, 762

Cotton, J. E., and Ames, R. L., books received, 1075
Cotton, J. E., and Field, C. W., books received, 418, 622
Cotton, L. A., on greisenization, 1494
Cousins, C. A., on metals, 702
Couvering, M. van, review by, 1762
Covellite, 521, 889, 1214, 1215
Crane, G. W., on East Tintic district, Utah, 1512
on Tintic district, Utah, 1120
Crawford, J., on faults, 987
Crawford, R. D., on Colo. Mineral Belt, 1425
Creasey, S. C., and Granger, A. E., on ramsdellite, 9
Crednerite, 13
Cretaceous, Alberta, Athabasca bituminous sands, geochemistry, 797
Nassau Co., N. Y., 1743
San Juan basin, New Mexico, 433
Cristobalite, 366
Crittenden, M. D., Jr., on manganese oxide, Utah, 42
Crocidolite, 631
Cross, W., on kodurites, 827
on Precambrian, Salida area, Colo., 1421
Cross, W., and Hillebrand, W. F., on nacrite, 157
Crowe, H. E., Swick, J. E., and Beins, R. R., colorimetric analyses by, 1333
Cryptomelane, 10, 278, 283, 285, 292, 293, 297, 301
Crystal structure, arsenopyrite, 1354, 1637
pyrite, 1354, 1360
pyrrhotite, 1349
Crystallates genetically associated with ore deposits, Residual characteristics of (Rattigan), 1272
Crystallization, sulfides and sulfur isotope fractionation, 77
Crystallography, arsenopyrite, 1637
textbooks (reviews), 620, 850, 853
Crystals, galena, sulfur isotopic ratios, 94
monazite (discussion), 614
Cuba, manganese, 37
manganese oxide, Charco Redondo area, 37, 38
Culbrandson, R. A., abstract by, 1333
Cumming, G. L., *et al.*, on age, Grenville metamorphic rocks, Quebec, 322
Sudbury deposits, Ont., 674
Cummingtonite, 1018, 1448
Cuprite, 890, 897
Cupro-descloizite, 1112
Cuproscheelite, 1421
Cuprotungstite, 1421
Curricular and professional aspects of geological engineering (Neilson, Snelgrove, Van Pelt), 1048
Currier, L. W., on lead-zinc, southern Appalachian district, 1088
on ores, Jefferson City, Tenn., 987
Cushman, R. V., *Ground water in north-central Connecticut*, 101–114
Cuyuna iron range, Minn., clay minerals with ores, 174
Czechoslovakia, pitchblende, Hercynian age, 384

Dadson, A. S., on Giant Yellowknife mine, N.W.T., 1593
Dadson, A. S., and Bateman, J. D., on Giant mine, Yellowknife, N.W.T., 1593
Dalmatianite, 351
Dalmer, K., on greisenization, 1494
Daly, R. A., on granite, 1280
Darnley, A. G., on pitchblende, 384
Darwin, C., on Porfiritica formation, Chile, 869
Das, B., on pegmatites, 638
Daubrée, A., on springs, 1480
on tin, 506
Davidite, Chemical characteristics of (Butler and Hall), 1541
Constitution of (Hayton), 1030
Davidson, C. F., *Rejuvenation of pitchblende in Hercynian ore deposits*, 383–398
discussion by, 1561
on cobalt, 672
on conglomerates, 410, 1561
on granites, 384
on origin, uranium ores, Blind River, Ont., 924
on uranium, 1655
on uranium minerals, 1754
reply to a discussion by, 842
review of monograph opposing ideas of, 1318
reviews of Russian books by, 849, 850, 1071, 1315, 1569, 1760
Davidson, C. F., and Atkin, D., on uranium, 354
Davidson, C. F., and Bowie, S. H. U., on thucholite, 681, 1720
Davidson, D. M., on granites, 810
Davis, E. W., on taconite, 565
Davis, G. L., *et al.*, on biotite, 324
Davis, G. R., ores, 805
Davis, N. B., on clays, 1399
Davy, H., on inclusions, 493
Davy, W. M., on veins, Huanuni district, Bolivia, 589
de Bethune, P., on carbonatites, 734
Dechow, E., *Geology, sulfur isotopes and the origin of the Heath Steele ore deposits, Newcastle, N. B., Canada*, 539–556
Decrepitation, tin ores, 487, 489
Degenhardt, H., on zircons, 1670
Degens, E. T., Williams, E. G., and Keith, M. L., on sandstones, 1302
de Jong, W. F., *et al.*, review of book by, 620
De Kalb, C., on Bisbee area, Ariz., 935

de Kock, W. P., on Ventersdorp reef, Rand, 716
Delano, P. H., on lithiophorite, 280
de Launay, L., on pitchblende, 385
on zoning, 1551
Demay, A., on pitchblende, 384
Denaeyer, M. E., on carbonatites, 734
Dennen, W. H., review of book by, 853
Density, iron ores, gravity prospecting, 467, 469
thucholite and associated organic matter, 1723
Deposits of the manganese oxides (Hewett and Fleischer), 1
Deringer, D. C., and Payne, J., Jr., on Paleozoic, Llallagua, Bolivia, 224
Derry, D. R., *Evidence of the origin of the Blind River uranium deposits*, 906–927
on conglomerate, Ont., 1751
on pegmatites, 638
DesCloizeaux, A., on nacrite, 156
Descloizite, 845, 1112
de Sénarmont, —., on arsenopyrite synthesis, 1353
de Sitter, L. U., on faults, 233
Determination of molybdenum in soil and rock, New geochemical method for the (Perry), 1232
de Villiers, J. E., on lithiophorite, 299
DeVore, G. W., on ore metals, 1275
Dewhurst, H. A., and Samuel, A. H., and Magee, J. L., on hydrogen peroxide, 1736
Diagrams, bauxite and syenite sample locations, Ark., 1665
carbonaceous materials, classification, 1718
chemical composition, garnet ore, N. Y., 274
circuit for electrode reactions of sulfides, 1207
color classes of quartz samples, 378
constant temperature apparatus, 355
contour interpolator, 1557
copper content, Calumet & Hecla conglomerate, Mich., 699
detrital mineral reconcentrations, 794
differential thermal analysis curve, bauxite, Spain, 1287
drill hole log, East Tintic district, Utah, 1138
electromagnetic anomaly, Garon Lake, Que., 342
engineering impingement on geology, 1053
Fe-As-S system, minerals and phase relations, 1348
garnet deposit locations, Adirondacks, N. Y., 259
geophysical effects of a vertical sheet, 474
Diagrams—*Continued*
H. Steele mine area, structural history, New Brunswick, 542
heating stage, 488
isopachs of Mississagi formation, Ont., 666, 669
lead minerals, stability diagrams, 1102
manganese ore structure, Pallapagudi, India, 831
metal ratios in ores and rocks, 121
mineralogical changes, Burgin mine, Utah, 1534
Morococha district, geological history, Peru, 966
paragenesis, ores, copper, Braden, Chile, 893
uranium, Mont., 373
phases, system Ag_2S-Bi_2S_3-PbS, 763
Au-Ag-Te, 1467
system Au-Te, etc., 1150
plotter for profiles, 202
probe for Eh-pH measurements, 931
rocks, chemical changes by alteration, 1493
salt-water body, Woodmere, N. Y., 1748
section through sandstone pipe, New Mexico, 442
Shinarump uranium channel deposits, Arizona, 723
SO_2 extraction and purification line, 1619
sphalerite geothermometry of ores, 821
stratigraphy, Jefferson City mine, Tenn., 988
Pottsville and Allegheny groups, Pa., 1293
uraniferous deposits, Colorado Plateau, 726
strike distribution of faults, Bolivia, 233, 236
structures of Kolar schist belt, India, 1439
sulfur isotopes, distribution, 1598
ratios in ore zones, H. Steele mine, N. B., 547
variations, 1685
taconite, lithologic types, 566, 568
vein displacement, Morococha, Peru, 971
veins, vertical development, Bolivia, 585
x-ray diffraction patterns, manganese oxides, 304
x-ray spectra of aegyrite, 734
Diamonds, U.S.S.R., Siberia (review), 1569
Yakutia (review), 851
Diaspore, 1291
Dibrov, V. E., review of report by, 1569
Dick, A. B., on dickite, 154
Dickite, 153, 171, 252, 253, 1479, 1489, 1497
Dictionaries, geological nomenclature (review), 1072
Differential thermal analysis, arsenopyrite, 1640
bauxite, Spain, 1287

Differentiation, granites and ore deposits, 1277
metamorphic differentiation, garnet ore, N. Y., 272
Diffractometer patterns, clay minerals, Alaska, 1490
Diffusion, copper, White Pine district, Mich. (discussion), 405
gold along arsenopyrite grains, 1346, 1381, 1645
sulfur isotopic fractionation, 78
Digenite, 889, 1214
Dikes, aplites, black sand derivative deposits, Idaho, 795
Blind River district, Ont., 912
Boulder batholith, Mont., 62
Braden copper district, Chile, 877
Coeur d'Alene district, Idaho, 647
Copper Mtn. scheelite district, Wyo., 1422, 1424
Fiji, Vatukoula gold field, 1466
Garon Lake district, Que., 338, 346
Johnson Camp, Ariz., 387
Kolar gold belt, India, 1445
Laguna uranium district, New Mexico, 444, 457
Lost River tin mine, Alaska, 1478, 1481
Mesabi district, Minnesota, 1028
mining districts with intrusive aphanites, 1625, 1627
Mistassini district, Quebec, 318
N'Kana Concession, Northern Rhodesia, 810
Ontario, 1752, 1755
Blind River uranium district, 659, 662, 675
ore districts, Bolivia, 223, 229, 591
pebble dikes, Braden pipe, Chile, 881, 902
East Tintic district, Utah, 1136
San Juan basin, New Mexico, 432
Yellowknife district, N.W.T., 1594, 1610, 1611, 1612
Dilatancy, Yellowknife district, N.W.T., 1596
Dillinger, L., and Sclar, C. B., *A method of mounting minute particulate samples of opaque ore minerals for quantitative microscopic analysis*, 187–191
Dines, H. G., on Cornwall district, England, 516
Diopside, 1026, 1338, 1417, 1418
Discussions—
Alteration of ilmenite (Lynd), 1064
Alteration of ilmenite and "arizonite" (Flinter), Karkhanavala, 843
Anomalous leads and the emplacement of lead sulfide ores—Erratum (Stanton and Russell), 841
Distribution of Witwatersrand uraninite (Davidson), Fuller, 842
Huronian uraniferous conglomerates (Davidson), Roscoe, 410
Discussions—Continued
Ilmenite, magnetite, and feldspar alteration under reducing conditions (Carroll), Austin, 1758
Ilmenite alteration under reducing conditions in unconsolidated sediments (Gruner), Carroll, 618
Isotopic composition of lead and Precambrian mineralization of the Coeur d'Alene district, Idaho (Long, Silverman, and Kulp), Searls, 1565
Malayan ilmenite *vs.* arizonite (Karkhanavala), Flinter, 1068
Mineralized conglomerates of Blind River (Roscoe), (Robertson and Steenland), Davidson, 1561
Monazite-bearing pegmatites in the south Georgia piedmont (Fortson and Navarre), Hurst, 610; a reply (Fortson and Navarre), 613
Some considerations in determining the origin of ore deposits of the Mississippi Valley type (Ohle), Schnellmann, 205
Some geochemical considerations on lead-isotope dating of lead deposits (Russell), Boyle, 840
Source bed concept (Knight), (Murray, Carter), Walpole, 615
Structural history of the Beaverlodge area (Chamberlain), Hill (Chamberlain), 617
Sulfide orebodies at Yauricocha, Peru (Ward), Thomson, 1070
Sulfur isotopes and hydrothermal mineral deposits (Jensen), Spinks, 206
System Cu-Fe-S-O (McKinstry), McKinstry, 1314
Titanium mineralogy of certain bauxites and their parent materials (Fleischer, *et al.*), Hartman, 1313
White Pine copper deposit (Sales) (Joralemon), White, 402
Willemite-hemimorphite relationship, Markham, 844
Dix, G. P., on Continental No. 1 mine, Utah, 936
Dixon, P., and Wylie, A. W., on lanthanons, 1034, 1541
Dodd, P. H., on sandstone, 437
Dolmage, V., on Pb-Zn ores, Brit. Columbia, 123
Dolomite, Jefferson City mine, Tenn., 988, 993, 999
sulfide deposits, west equatorial Africa, 1710, 1711
Domes, Ambrosia dome, New Mexico, 437
Donnay, G., Kracek, F. C., and Rowland, W. R., on empressite, 1151
Drill cores, contact printing (communication), 1303
Drilling, Blind River uranium area, Ont. (abstract), 1341
East Tintic district, Utah, 1519, 1521, 1526

Drilling—*Continued*
Garon Lake sulfide area, Que., 340, 344
sulfur deposits, Lake Ixpaco, Guatemala, 537
Dubois, P. H., on gamma MnO_2, 301
Dunbar, C. O., and Rodgers, J., on barite, 631
Dunham, K. C., on manganese oxides, 47
on zoning, Pennine district, England, 205
Dunning, C. H., and Peplow, E. H., Jr., review of book by, 418
Dunning, H. N., and Moore, J. W., on oil, 798
Dunning, H. N., Moore, J. W., and Myers, A. T., on porphyrin, 801
Dunning, H. N., with Champlin, J. B. F., *A geochemical investigation of the Athabasca bituminous sands*, 797
Durek, J. J., spectroscopic analysis by, 1110
Durham district, England, S^{34} enrichment in sulfides and sulfates, 522, 523
Durrell, C., on celestite, 49
Dust, smelter, rhenium content (communication), 609
Du Toit, A., on Witwatersrand conglomerate deposits, 714
Dzhezkazgan copper deposit, rhenium-molybdenum geochemistry, U.S.S.R. (communications), 608

Eakin, L. G., analysis by, 21
Eardley, A. J., on ore, East Tintic, Utah, 1517
on Precambrian, Utah, 1126
Earley, J. W., *et al.*, on chlorite, 164
on chlorite-montmorillonite, 1491
Earth, physics and chemistry (review), 1571
physics and geology (review), 621
Germany, East, arsenopyrite, Freiberg, 1355, 1638, 1639, 1644
cassiterite, inclusions, 491, 496
galena-bismuth minerals, Freiberg deposit, 774, 777
pitchblende, Hercynian deposits, 383
East Tintic district, Utah, Chief Oxide-Burgin area discoveries; A case history Part I (Lovering and Morris), 1116; Part II (Bush and Book), 1507
Eckel, E. B., on La Plata, Mtns., Colo., 1625
Eckelmann, F. D., and Kulp, J. L., on pitchblende, 652
Economic Geology, 50th Anniversary Volume, translation (review), 850
Economic Geology Publishing Co., i
Economic Geology—and Waldemar Lindgren (Bateman), i
Edgington, G., *et al.*, uranium chemical analysis by, 1333
Editorials—
If Lindgren were here (Graton), 192
Edwards, A. B., analysis by, 1469
on arsenopyrite, 1646
on concentration of minor elements, 1274
on exsolution, 395
on Kalgoorlie gold field, Western Australia, 1162
Edwards, A. B., and Gaskin, A. J., on tin, 1278
Edwards, A. B., and Lyon, R. J. P., on sphalerite, 1501
Ehrenberg, H., Pilger, A., and Schroeder, F., on barium, 632
Ehrenburg, H. F., on pitchblende, 384
Eire, nonferrous mining, future prospects (review), 854
Electro-magnetic surveys, aero E.M. survey, Garon Lake, Que., 343
Electron micrographs, quartz, 365
Electron microscopy, quartz, 368
Eliseev, L., and Nagirnyak, F., on sulfides, 1204
Ellsworth, H. V., on thucholite, 681, 1716
Elmore, P. L. D., analyses by, 1492
Embrey, P. G., on arsenopyrite, 1645
Emeralds, U.S.S.R., Izumrud deposit (review), 1571
Emerson, D. O., and Wright, H. D., on Lone Eagle mine, Mont., 57
Emery, K. O., review of book by, 1317
Emmons, R. C., Reynolds, C. D., and Saunders, D. F., on lamprophyres, 1755
Emmons, W. H., on gold, 1757
on hydrothermal deposits, 1277
on mine waters, 950
on ore genesis, 1245
on selenides, 1553
on zoning, 1551
Emmons, W. H., and Larsen, E. S., Jr., on Wagon Wheel Gap springs, Colo., 44
Emmons, W. H., *et al.*, review of textbook by, 1766
Empressite, 1149, 1158, 1171, 1470
Enargite, 890, 978
En echelon folds, Kolar gold belt, India, 1439, 1450, 1452, 1455
Engels, B., review of monograph by, 1316
Engineering, Curricular and professional aspects of geological (Neilson, Snelgrove, and Van Pelt), 1048
Engineering geology (reviews), 207, 1318
Engineering impingement on geology, 1054
England, arsenopyrite, New Consols mine, Cornwall, 1645
cassiterite inclusions, 491, 494, 504
Cornwall district, zoning of sulfides, 516
lead-zinc, Pennine area (discussion), 205
pitchblende, Hercynian deposits, 383
thucholite, 1720
Enrichment, Braden copper district, Chile, 898
dehydration curves of zinc minerals (discussion), 846
Magma, *et al.*, copper mines, 933, 935

Enrichment—*Continued*
sulfides, Eh-pH diagrams (abstract), 1331
sulfur isotopes, Yellowknife district, N.W.T., 1603, 1614
sulfur isotopes, fractionation, 79
ratios in enrichment, 547
Enstatite, 159, 400
Epidote, 891, 1186, 1187
Equations, alpha counts, 1658
deviations from a standard sample, 1620
garnet porphyroblast growth, 275
hydrogen peroxide-oxygen gas couple, 937
niobium content determination, 745
potassium decay constants, 1679
Pronto reaction, 920
radiation effects of water, 1735
reflectivity of anisotropic minerals, 1309
smithsonite dissociation, 1092
strontium isotopic fractionation, 206
sulfur isotope enrichment, 555
titanium reduction (discussion), 619
Erd, R. C., Evans, H. T., and Richter, D. H., on smythite, 1350
Erhard, T., and Stelzner, A., on inclusions, 497
Erickson, R. L., Myers, A. T., and Horr, C. A., on uranium, 1717
Eskola, P., on cordierite, 351
on petrologic calculation, 1491
Espenshade, G. H., on manganese oxide, 16
on scheelite, Kings Mtn. mine, N. C., 1427
Ettlinger, I. A., and Short, M. N., on Magma sulfide deposit, Ariz., 933
Europe, bauxite, clay minerals, origin (abstract), 1338
ore deposits, metallogenesis (review), 1761
pitchblende, Hercynian deposits, 383
Evans, D. L., on Pailaviri conglomerate, Bolivia, 222
Evans, H. T., and Garrels, R. M., on vanadium, 1112
Evans, R. D., and Goodman, C., on radioactivity of rocks, 1660
Ewell, R. H., and Insley, H., on argillic alteration minerals, 1479
on kaolinite, 154
Experiments, calcium replacement by phosphorous, etc., 355
conversion of sulfides to SO_4, 1619
electrode reactions of sulfides, 1210, 1227
fractures on a rubber sheet, 242
galena treatment for lead isotopes, 649
gold, Kolar field, India, 1458
heating-stage tests, 488
hemimorphite-willemite dehydration curve (discussion), 844
irradiation of quartz and opal, 368
oxidation of metal-salt solutions, 940
porphyrin extraction from bituminous sands, 798
Experiments—*Continued*
solubilities of zinc minerals, 1090
system Ag_2S-Bi_2S_3-PbS, 761
system Au-Ag-Te, subsolidus equilibrium relations, 1153
uraninite, stability during transport, 689
Exploration, Application of the gravity method to iron ore (Hinze), 465
Critical remarks on the genesis of ore as applied to future mineral (Sales), 805
clays, Mercer deposits, Pa., 1302
East Tintic district, Utah, 1116, 1119, 1140, 1508, 1513, 1519, 1524
iron, Quebec-Labrador range, 1057
structural methods (review), 417
Exsolution, chalcopyrite from sphalerite, 395
Eyles, V. A., on basalt, 1656

Fairchild, J. G., analyses by, 34
Falun sulfide deposit, Sweden, sulfur isotope abundances, 514, 521
Famatinite, 890
Farquhar, R. M., and Cuming, G. L., on lead isotopes, 654
Farquhar, R. M., and Russell, R. D., on age, Grenville metamorphic rocks, Que., 322
Faul, H., age determinations by, 386
on granites, New Brunswick, 543
Faults, Baie Verte area, Newfoundland (communication), 399
Blind River area, Ont., 661, 670, 719, 1751
Bolivia, Llallagua-Oruro region, 217, 225, 231, 235
Braden copper district, Chile, 878
Bristol silver mine, Nevada (abstract), 1337
Coeur d'Alene district, Idaho, 647
East Tintic district, Utah, 1116, 1118, 1126, 1128, 1143, 1508, 1511, 1520, 1522, 1527, 1529, 1532
equatorial west Africa, 1708, 1712
Grandview scheelite mine, Colo., 1422
Hanover district, New Mexico, 1249
Jefferson City mine area, Tenn., 989
Katanga copper belt, 712
Kolar gold field, India, 1440, 1442, 1445
Lordsburg district, New Mexico, 1262, 1264
Lost River tin mine, Alaska, 1481
magmatic and non-magmatic ore deposits (abstract), 1328
Mistassini district, Quebec, 314, 318
Morococha district, Peru, 964, 970, 972, 983
Orange Free State, gold fields, 717
San Juan basin, New Mexico, 441, 456
Saskatchewan, Beaverlodge area (discussion), 617
W. Wilson uranium mine, Mont., 62
White Pine fault, Mich. (discussion), 403

Faults—*Continued*
Witwatersrand, "fault trench" in gold deposits, 714
Yellowknife district, N.W.T., 1595, 1597, 1610, 1612
Fawley, A. P., and James, T. C., on soils, 738
Fayalite, 951, 1018
Feely, H. W., and Kulp, J. L., on bacteria, 75
Feigl, F., on molybdenum, 1238
Feitknecht, W., and Marti, W., on manganese oxide, 302
Feldspar, Florida, weathering of feldspar sand, 1394
Feldspars in some intrusive rocks near Globe-Miami, Arizona, Compositional variation of alkali (Kuellmer), 557
Feldtmann, F. R., on pyrrhotite, 1177
Fennelly, E. J., fluorometric analysis by, 147
Fenner, C. N., on magmatic fluids, 598
on ore genesis, 1245
on springs, 1480
Fenske, M. R., *et al.*, on oil optical activity, 1731
Ferguson, H. G., and Bateman, A. M., on greisenization, 1494
on tin deposits, 1277
Ferguson, H. G., *et al.*, on porphyries, Nev., 1629
Fermor, L. L., on bauxite, 1656
on manganese ores, 827
Ferrimolybdite, 892
Fersman, A. E., on pegmatites, 733
Festschrift, W. H. Bradley (review), 1767
Fettke, C. R., on structural axes, Pa., 1292
Feulner, A. J., and Hubble, J. H., *Occurrence of strontium in the surface and ground waters of Champaign County, Ohio*, 176–186
Field, C. W., and Cotton, J. E., books received, 209
Field, C. W., and Jensen, M. L., abstract by, 1329
Fiji, gold, Vatukoula deposit, Viti Levu, 1465
Finch, J. W., *et al.*, on granites, 557
Finland, alteration, Orijärvi sulfide area, 351
crystalline basement rocks (review), 1315
sulfur isotopes, Outokumpu, 1687
ratios, Outokumpu, 83, 84, 85
Firman, R. J., on nacrite, 156
Firtion, F., on Eh of sediments, 930
Fischer, E. C., on bauxites, 1656
Fischer, R. P., on roll structures, 454
Fissures, Congo-Rhodesian copper belt, 712
Fleck, H., and Haldane, W. G., on pitchblende, 141
Fleischer, M., analyses by, 21
communication by, 607
on galena, 760
Fleischer, M.—*Continued*
on minor elements, 1641
on rhenium, 607
Fleischer, M., and Harder, J. O., on niobium, 733
Fleischer, M., and Richmond, W. E., on manganese oxides, 2, 300
Flescher, M., *et al.*, discussion of report by, 1313
Fleischer, M., Neuschel, S. K., and Axelrod, J. M., on manganese minerals, 3
Fleischer, M., with Hewett, D. F., *Deposits of the manganese oxides*, 1
Flint, R. F., on Conn. River channel, Conn., 104
Flinter, B. H., discussion by, 1068
on ilmenite, 1064
reply to a discussion by, 843
Florida and origin of the kaolin, Kaolinitic sediments in peninsular (Pirkle), 1382
Fluorite, 47, 49, 447, 487, 491, 494, 504, 635, 989, 1499
Folding, mineralization relation to folding, Rhodesian copper belt, 812
Folds, Africa, lower Congo region, 1708
Alum shales, Sweden, 704
Baie Verte area, Newfoundland (communication), 399
Blind River district, Ont., 662, 909
Braden copper district, Chile, 878
Coeur d'Alene district, Idaho, 647
Congo-Rhodesian copper belt, 711
East Tintic district, Utah, 1126, 1128, 1527, 1531
H. Steele mine area, New Brunswick, 543
Koduru area, India, 830
Kolar gold field, India, 1430, 1438, 1445, 1450
Jefferson City district, Tenn., 988
Morococha district, Peru, 964, 983
Ocala limestone arch, Florida, 1389
ore districts, Bolivia, 231
San Juan basin, New Mexico, 437, 442, 449, 458, 460
White Pine district, Michigan (discussion), 405
Yellowknife district, N.W.T., 1594
Foley, L. L., communications by, 1551, 1553, 1757
Folinsbee, R. E., on photocells, 1306
Font-Altaba, M., and Closas M., J., *A bauxite deposit in the Paleozoic of Leon, Spain*, 1285–1290
Foote, R. B., on schists, 1432
Formation of phosphorite from calcite, Some cation substitutions during the (Ames), 354
Formulas, chalcocite oxidation, 1203, 1205
distance functions over a vertical sheet, 473
distribution ratio between extracting phases, 1242
hydrozincite formation, 1096

Formulas—*Continued*
kaolinite formation, 1479, 1502
melonite formation, 1174
molybdenum, sample content, 1238
percent deviation from a standard, 513
pyrite formation from iron oxide, 1684
uranium and iron oxide reactions, 1032
Forrester, J. D., on mineral exploration, 1050
Forsterite, 159
Fortson, C. W., Jr., and Navarre, A. T., discussion of a communication by, 610
reply to a discussion of a paper by, 613
Foundering, 993
Fox, C. S., on basalt, 1656
Fox, R. W., on sulfides, 1205
Fractionation, isotopes (discussion), 840
sulfur isotopes, 522, 525, 527, 528, 1688
Yellowknife district, N.W.T., 1592, 1597, 1614
sulfur isotopes during mineralization, 539, 548
Fractionation in sulfide mineralization, Sulfur isotope (Gavelin, Parwel, and Ryhage), 510
Fractionation of metals into ore deposits, 1273, 1275
Fractures, East Tintic district, Utah, 1136
Lost River tin mine area, Alaska, 1483
Morococha district, Peru, 964, 969, 979, 984
ore districts, Bolivia, 245
siliceous reefs, Mont., 374
White Pine district, Mich. (discussion), 405
Fracturing, ore deposits, Bolivia, 593
France, bauxite, potassium content, 1671
pitchblende, Hercynian deposits, 383, 385
Francis, W., on coal metamorphism, 1717
Franckeite, 575, 576, 600
Franklinite, 12, 22
Frantovic, D., on limestone, 1656
Fred, M., Nachtrieb, N. H., and Thompkins, F. S., on spectrochemical analysis, 1724
Frederickson, A. F., on zirconium, 1670
Frederickson, A. F., and Cox, J. E., on hydrothermal systems, 1479
Free Enterprise uranium mine, Montana, 62
French Equatorial Africa, sulfide deposit, 1710
uranium, Mounana deposits (discussion), 1564
French Guinea, bauxite, potassium content, 1671
Frey, E., and Wilson, S. R., on Copper Mtn. scheelite deposit, Wyo., 1426
Friedman, G. M., on pyrite, Ont., 1753
on sulfides, 672
Friedman, I., on hydrogen, 80
Friedrich, K., on system Ag_2S-PbS, 768
Friedrichs, K., on Fe_2As_2, 1350
Fries, C., Schaller, W. T., and Glass, J., on bixbyite, 11
Frondel, C., on chlorites, 162
on hydrohausmannite, 10
on quartz, 367
Frondel, C., Hurlbut, C. S., Jr., and Collette, R. C., on tourmaline, 1500
Fryklund, V. C., and Fletcher, J. D., on sphalerite, 819
on veins, 648
Fuchs, L. H., with Hoekstra, H. R., *The origin of thucholite*, 1716
Fuller, A. O., discussion by, 842
on quartzites, 842
Fulton, R. B., on soil acidity, Austinville, Va., 1099
Fumaroles, tin deposits, 500
Fumarolic hydrogen sulfide, Sulfur mud deposit formed through bacterial transformation of (Ljunggren), 531
Fyfe, W. S., Turner, F. J., and Verhoogen, J., on pyroxene hornfels facies, 1415

G. Washington uranium mine, Mont., 62
Gabelman, J. W., on uranium deposits, 447
Gabrielse, H., *The genesis of chrysotile asbestos in the Cassiar asbestos deposit, northern British Columbia*, 327–337
Galaxite, 12, 22
Galena, 73, 78, 81, 85, 93, 97, 323, 366, 516, 525, 526, 546, 549, 581, 608, 645, 649, 655, 656, 774, 782, 785, 823, 888, 1086, 1101, 1102, 1106, 1107, 1110, 1177, 1215, 1218, 1336, 1516, 1551, 1553, 1604, 1609, 1693, 1701
argentiferous galena, 759
Gallo, G., on $SrSO_4$, 177
Garlick, W. G., on ores, 805
Garlick, W. G., and Brummer, J. J., on granite, vii, 809
Garnet, 223, 283, 290, 296, 468, 1187, 1418, 1758
Garnet deposit, New York, Genesis of the Gore Mountain (Bartholomé), 255
Garon Lake, Quebec, Discovery of a copper-zinc deposit at (Joklik), 338
Garrels, R. M., on H_2S, 547
on oxidation potentials, 929
on sphalerite, 1089
on uranium, 836
review of book by, 622
Garrels, R. M., and Naeser, C. R., on chalcocite, 547
Gast, P., Rb-Sr age determination by, 85
Gast, P. W., Kulp, J. L., and Long, L. E., on granites, 1424
Gaudin, A. M., and McGlashan, D. W., on system Ag_2S-Bi_2S_3, 769
Gavelin, S., on Skellefte district, Sweden, 522
Gavelin, S., Parwel, A., and Ryhage, R., *Sulfur isotope fractionation in sulfide mineralization*, 510–530

Gay, R., review of book by, 850
Geffroy, J., and Sarcia, J. A., on pitchblende, 385
Geijer, P., on Falun sulfide district, Sweden, 514
Geller, S., and Wernick, J. H., on matildite, 762
Gems, emeralds, U.S.S.R., Izumrud deposit (review), 1571
North America (review), 1073
pearls and gems (review), 208
Genesis, bauxite, Spain, Leon province, 1285
blacksand placers, Idaho, 794
copper-zinc, deposits about intrusives, New Mexico, 1256, 1262, 1268
iron ores and clay minerals, Lake Superior, 165
Lovozero alkali massif, U.S.S.R. (review), 853
manganese oxide deposits, 2
ores, Silver Reef, Utah (communication), 835
sulfides, Bathurst-Newcastle area, New Brunswick, 1683
tin deposits, 500
tungsten deposits, Colo.-Wyo., 1423, 1425
uranium, Blind River district, Ont., 1751, 1754
San Juan basin, New Mexico, 463
Genesis of chrysotile asbestos in the Cassiar asbestos deposit, northern British Columbia (Gabrielse), 327
Genesis of ore as applied to future mineral exploration, Critical remarks on the (Sales), 805
Genesis of the Gore Mountain garnet deposit, New York (Bartholomé), 255
Genetic aspects of the monazite and columbium-bearing rutile deposits in northern Lemhi County, Idaho (Anderson), 1179
Gentner, W., and Kley, W., on granite, 384
Geochemical investigation of the Athabasca bituminous sands (Champlin and Dunning), 797
Geochemical method for the determination of molybdenum in soil and rock, New (Perry), 1232
Geochemical prospecting (review), 1567
copper, Colorado, Jefferson Co. (abstract), 1329
East Tintic district, Utah, 1509, 1518, 1537
oil and gas deposits, U.S.S.R. (review), 1315
Tintic district, Utah, 1124
U.S.S.R., symposium (review), 1762
Geochemical prospecting and appraisal of niobium-bearing carbonatites by x-ray methods (Van Wambeke), 732
Geochemistry, alteration, Mont., 69, 379
Alum shales, Sweden, 703
Geochemistry—*Continued*
arsenopyrite, elements soluble in arsenopyrite, 1641
beryllium and Be deposits (review), 1570
copper-zinc content of igneous rocks, 1256
davidite, 1030
analysis, 1541, 1542
differentiation of minor elements, 1274
gold and silver in manganese ore, Ark. (communication), 1757
ground water, Cedarhurst-Woodmere area, N. Y., 1745
lead deposit dating (discussion), 840
Lovozero alkali massif, U.S.S.R. (review), 853
manganese oxides, 17, 20, 28
western U.S., 33, 38
molybdenum in soil and rock, 1232
oxidation, sulfide minerals, 1204
sulfide ores, 928
Phosphoria formation, Idaho (abstract), 1333
rhenium (communication), 607
selenium and tellurium (review), 1316
strontium, 177
sulfur isotopes, 74
textbooks, reprinted works of V. I. Vernadskii (review), 1315
tin migration, 506
uranium, Blind River, Ont., 681
non-Russian occurrences (review), 1316
Ontario, 1754
weathering and the chemical elements, 1654
zinc absorption by marine life, 1002
zinc-lead, supergene alteration, 1084, 1090
Geodesy, contemporary geodesy (review), 208
Geography, Anglo-America (review), 209
Bathurst-Newcastle area, New Brunswick, 1678
Braden copper deposit, Chile, 866
California, coastal seas (review), 1317
Champaign Co., Ohio, 177
Kolar gold field, India, 1434
physical geography, textbook (review), 1766
rutile deposits, Lemhi Co., Idaho, 1180
Geological engineering, Curricular and professional aspects of (Neilson, Snelgrove and Van Pelt), 1048
Geological history, Beaverlodge uranium area, Saskatchewan, structural history (discussion), 617
blacksand placers, Idaho, 792
Blind River district, Ont., 670, 923, 1751
Braden copper district, Chile, 868
Braden copper ore body, Chile, 898
Cassiar asbestos area, 327, 334
Connecticut, north-central Conn., 104
East Tintic district, Utah, 1128

Geological history—*Continued*
Hanover-Fierro intrusive, New Mexico, 1251
Lost River tin mine area, Alaska, 1483
Mesabi Range, Minnesota, 1010
Mistassini district, Quebec, 324
ore districts, Bolivia, 590, 592, 602
Precambrian, scheelite deposits, Colo.-Wyo., 1424
San Juan basin, New Mexico, 437
Geological maps, Bathurst-Newcastle district, New Brunswick, 1681
Blind River district, Ont., 914
Bolivia, ore districts, 220, 225, 228
Braden copper mine area, Chile, 870
Champaign Co., Ohio, 178
Coeur d'Alene district, Idaho, 647
Congo-Rhodesian mineral belt, 708
Connecticut, north-central Conn., 108
Cornwall district, England, 520
Georgia, Adams property, Culloden, 612
H. Steele mine area, New Brunswick, 541
intrusives, New Mexico, 1248
Kolar gold field, India, 1435
Lake Albanel iron range, Quebec, 314
Lost River tin mine, Alaska, 1481
lower Congo region, Africa, 1709
McDame area, Brit. Columbia, 329
Mattagami Lake area, Que., 340
Mesabi district, Minn., 1007
Miami area, Ariz., 559
Morococha district, Peru, 965
ore and fault zones, Blind River, Ont., 662
San Juan basin, New Mexico, 432
structure, East Tintic district, Utah, 1127, 1142
subsurface mapping (review), 1317
U.S.S.R., Soviet Arctic, Quaternary deposits (review), 1570
Geological periodicals, index (review), 849
Geology, sulfur isotopes and the origin of the Heath Steele ore deposits, Newcastle, N. B., Canada (Dechow), 539
Bathurst-Newcastle area, New Brunswick, 1676, 1680, 1704
bauxite, Portilla de Luna deposit, Spain, 1288
Blind River uranium district, Ont., 660, 909
Bradley Volume (review), 1766
Burgin shaft, East Tintic district, Utah, 1527
Cassiar asbestos district, British Columbia, 327
Champaign Co., Ohio, 180
Citronelle sediments, Florida, 1386
coal, New Zealand (review), 415
Coeur d'Alene district, Idaho, 646
Connecticut, north-central Conn., 102
Decaturville disturbance, Missouri (abstract), 1340
East Tintic district, Utah, 1116, 1125
Geology—Continued
East Vermilion Cliffs area, Ariz., 139
Elk City placer deposits, Idaho (abstract), 1325
emeralds, U.S.S.R., Izumrud deposit (review), 1571
engineering geology (reviews), 207, 1318
Garon Lake sulfide district, Que., 341, 346
Gore Mtn. region, Adirondacks, N. Y., 256
H. Steele mine area, New Brunswick, 540
igneous and metamorphic geology (review), 621
Jefferson City zinc district, Tenn., 988
Johnson Camp, Ariz., 387
Kalgoorlie gold district, Western Australia, 1162
Kolar gold field, India, 1434
Lost River tin mine, Alaska, 1481
Mattagami area, Quebec (abstract), 1326
Mesabi district, Minnesota, 1008
monazite-columbite deposits, Idaho, 1181
Nassau Co., N. Y., 1743
Nsuta manganese deposits, Ghana, 281
ore deposits, Bolivia, 219
ore deposits and intrusives, New Mexico, 1247, 1258, 1263
petroleum (review), 417
physics and geology (review), 621
San Juan basin, New Mexico, 431
scheelite deposits, Colo.-Wyo., 1409
Temiscamie iron-formation, Quebec, 311, 312
textbooks (reviews), 620, 852, 1766
U.S.S.R., history of studies 1800–50 (review), 1761
Lovozero alkali massif (review), 853
textbook (review), 1760
Yakutia (review), 851
Utah, Tintic and East Tintic mining districts (review), 1762
Vatukoula gold-telluride deposit, Fiji, 1466
Geology applied to industrial minerals, Intriguing examples of (Gillson), 629
Geology of the Braden orebody, Chile, South America (Howell and Molloy), 863
Geophysical maps, Marenisco range, Wis., 481
Geophysical prospecting, East Tintic district, Utah, 1145, 1518
engineering structures (review), 1318
gravity exploration, Lake Superior region, 465
metal deposits (abstract), 1335
resistivity surveys, Woodmere, N. Y., 1739, 1742, 1747, 1748
sulfides, Garon Lake, Que., 338, 342
Geophysics, geology and physics (review), 621

Geophysics—*Continued*
gravity prospecting method, 467
physics of the earth (review), 1571
George, R. D., *et al.*, on manganese in hot spring waters, 44
Georgia, kaolin balls, Providence Canyons, 1395
manganese oxides, 15
monazite, pegmatite deposits (discussion), 610
Geothermal gradients, ore guides, East Tintic district, Utah, 1140, 1145, 1521
Geothermometer to some northern New Brunswick sulfide deposits, Application of the sphalerite (Benson), 818
Geothermometry, Burgin mine, Utah, 1538
freezing points of liquid inclusions (abstract), 1337
Texas and New Mexico, pre-Simpson deposits (review), 1075
Gerasimov, Ya. I., on mobile components, 1566
review of book by, 1316
Germanium, Arkansas, Bellah area (communication), 1552
Germany, copper, Kupferschiefer deposits, 704
microtectonic methods (review), 1316
niobium-bearing carbonatite, Kaiserstuhl, 739
Geyserite, 532
Geysers, Lake Ixpaco, Guatemala, 532
Ghana, West Africa, Manganese oxides and associated minerals of the Nsuta manganese deposits (Sorem and Cameron), 278
bauxite, potassium content, 1671
Gibb's phase rule, 1361
Gibbsite, 1285, 1286
Gill, J. E., and Owens, O. E., on carbonatites, 737
Gillery, F. H., on serpentine, 155
Gillson, J. L., *Intriguing examples of geology applied to industrial minerals*, 629–644
President's report to the S.E.G., 1580
review of book edited by, 853
Gillson, J. L., and Williamson, R., on hornfels, 351
Gilluly, J., on Tombstone intrusive, Ariz., 1626
Ginzburg, A. I., on carbonatites, 734
Ginzburg, I. I., review of book by, 1567
Gladkovsky, A. K., on bauxites, Urals, 1289
Glaucophane, 1187
Glemser, O., on gamma MnO_2, 280
Glicksman, R., and Morehouse, C. K., on gamma MnO_2, 303
Globe-Miami, Arizona, Compositional variation of alkali feldspars in some intrusive rocks near (Kuellmer), 557
Glossaries, gems, North America (review), 1073
geological nomenclature (1959), 1072
Gmelin, —., on gold sulfides, 1356
Gneisses of Colorado, Scheelite in the Precambrian (Tweto), 1406
Goethite, 278, 284, 289, 298, 951, 955
Gogebic iron range, Mich., clay minerals with ore, 172
Goguel, J., review of book by, 1318
Gold, 141, 688, 888, 1167, 1174, 1346, 1356, 1380, 1381, 1470, 1471
Arkansas, manganese deposit, Polk Co. (communication), 1757
arsenopyrite-gold in ore deposition, 1645, 1648
California, auriferous gravels, Sierra Nevada, 697
East Tintic district, Utah, 1134
Orange Free State field, 716
sedimentary rock deposits (review), 1074
system Au-Ag-Te, 1148, 1460
Western Australia, Kalgoorlie district, telluride minerals, 1162
Witwatersrand (review), 1318
conglomerate deposits, 713
origin, 198
uraninite distribution (discussion), 842
Gold-bearing lodes, Kolar gold field, India, Structural control and localization of (Narayanaswami, Ziauddin, and Ramachandra), 1429
Goldich, S. S., and Bergquist, H. R., on bauxite, 1656
Goldich, S. S., Baadsgaard, H., and Nier, A. O., on age, Lake Superior iron formations, 322
Goldich, S. S., with Quirke, T. T., Jr., and Krueger, H. W., *Composition and age of the Temiscamie iron-formation, Mistassini Territory, Quebec, Canada*, 311
Goldman, M. I., on limonite, 1665
Goldman, M. I., and Tracey, J. I., Jr., on clay veinlets, 1666
Gold-quartz deposits of the Yellowknife district, Sulfur isotope investigation of the (Wanless, Boyle, and Lowdon), 1591
Goldschmidt, V. M., on chromium, 1282
on galena, 784
on molybdenum, 1105
on oxidation potentials, 929
on weathering, 1654
on α $AgBiS_2$, 773
Goldsmith, R., on granofelses, 1012
Goodwin, A. M., on muscovite, 164
Gorai, M., on feldspar, 266
Goranson, R. W., on granite, 506
Gordon, L., Vanselow, C. H., and Willard, H. H., on fluorides, 1549
Gordon, M., Jr., and Murata, K. J., on bauxite, 1654
on columbium, 1313

Gordon, M., Jr., Tracey, J. I., Jr., and Ellis, M. W., on siderite, 619
Gordon, S. G., on monazite, 575
Gore, W. L., on flow rate, 356
Gore Mountain garnet deposit, New York, Genesis of the (Bartholomé), 255
Gossans, sulfide deposits, Bathurst-Newcastle area, New Brunswick, 1680
Blind River area, Ont., 672
Gottschalk, V. H., and Buehler, H. A., on sulfides, 1204
Gouge, 369, 710, 1422, 1532
Grabens, prospecting for alkaline igneous rocks, 737
Graham, A. R., on silver sulfosalts, 760
Graham, A. R., Thompson, R. M., and Berry, L. G., on cannizzarite, 762
Granites, Bathurst-Newcastle area, New Brunswick, 1677, 1699, 1701, 1704
Blind River area, Ont., 909
Colo.-Wyo., 1409, 1424
England, Pennines (discussion), 205
granitic texture, 1623
Kolar gold district, India, 1435
linear expansion, 979
Lost River tin mine, Alaska, 1478, 1485, 1486
Mesabi Range, Minnesota, 1009
New Brunswick, 543
niobium-tantalite deposits, 733
ore deposits and granites, 807, 1277
Yellowknife district, N.W.T., 1593, 1598
Granitization, 199, 539
Yellowknife gold district, N.W.T., 1592
Graphite, 539, 554
graphitic zones, Garon Lake, Que., 342
Graphs, alpha counting compared to uranium fluorimetry, 377
alpha counts *vs.* Th:U ratio, 1658
carbonaceous materials, metamorphism, 1718
chalcocite, electrode potentials, 1209
compositional variations of alkali feldspars, 560
copper-zinc and alteration about a vein, New Mexico, 1266
curves for calcium replacement, 358
Eh-pH measurements of mine waters, 939
geochemical and geothermal graphs, Burgin mine, Utah, 1538
hemimorphite-willemite dehydration curve, 845
humic acid extraction from coal by alkali, 1043
internal standard method of x-ray analysis, 746
ionic potential of chemical elements, 1655
lanthanons in lanthanons, 1546
metallic sulfide ratios in ores and rocks, 132
pyrite-arsenopyrite assemblage stability curve, 1376
quartz percentage and grain size in sandstones, Pa., 1298
Graphs—*Continued*
rock density relationships, 468
sand grain frequency curves, 802
solubilities of zinc minerals, 1092
spectra of porphyrin complexes from Athabasca oil, 799
spectrophotometric curves, molybdenum xanthate in benzene, 1236
sulfur, isotopic abundance, 75
isotopic variations of sulfides, 515
thorium and uranium content and packing of conglomerate, 677
Graton, L. C., *If Lindgren were here—Editorial*, 192–200
on ore fluid, 596
on Rand conglomerate, 700
Graton, L. C., and Bowditch, L. I., on mineralization temperature, Bolivia, 593
Gravel, 639
California, auriferous deposits, 697
uranium and thorium content (discussion), 1563
Gravity method to iron ore exploration, Application of the (Hinze), 465
Gravity surveys, Pennine district, England (discussion), 205
Grawe, O. R., on braunite, 11
Gray, A., on ores, 805
Greece, bauxite, potassium content, 1671
Greenland, sulfides, sulfur isotopic ratios, 78, 84, 85, 91
sulfur isotopes, Ivigtut area, 1687
Greenockite, 408, 989, 1087, 1089, 1107, 1108, 1114
Greenstones, sulfur isotopes, Yellowknife district, N.W.T., 1599, 1600
Gregory, H. E., on gneiss, 103
Greisen, Lost River tin mine, Alaska, 1483
Greisenization, Lost River tin mine, Alaska, 1478, 1483, 1491
Grenville metamorphic complex, Mistassini district, Quebec, 317
Grim, R. E., on clay minerals, 536
on clays, 634
on kaolinite, 1501
Grim, R. E., and Johns, W. D., on chlorite, 161
Grimaldi, F. S., May, I., and Fletcher, M. H., on uranium fluorimetry, 376
Grip, E., on sulfides, 527
Grip, E., and Ödman, O. H., on thucholite, 1720
Grogan, R. M., on fluorite inclusions, 635
Gronvold, F., and Haraldsen, H., on pyrrhotite, 1349
Groothoff, C. T., on inclusions, 487
Gross, G. W., and Moore, J. E., on geophysical prospecting for clay, Pa., 1302
Gross, W., on Blyklippen mine, Greenland, 730
Ground water in north-central Connecticut (Cushman), 101

Ground waters of Champaign County, Ohio, Occurrence of strontium in the surface and (Feulner and Hubble), 176
Grout, F. F., on sulfides, 1205
on zoning of pegmatites, 639
Grout, F. F., and Broderick, T. M., on Biwabik formation, Minn., 1005
Grout, F. F., *et al.*, on eastern Mesabi district, Minn., 1006
Groutite, 10
Grummitt, W. E., *et al.*, on beta activities of metals, 1062
Gruner, J. W., on argillic alteration minerals, 1479
on Biwabik formation, Minn., 1006
on groutite, 10
on ilmenite, 618, 1064, 1758
on iron formations, Minn., 319
on iron ores, 150
on sericite, 596
on taconites, 564
Gruner, J. W., and Knox, J. A., on heavy minerals, Morrison formation, New Mexico, 1758
Grunerite, 469
Guatemala, sulfur, Lake Ixpaco, 531
Guild, F. N., on galena, 759
Guimarães, D., on niobium, 738
Gummite, 680, 920, 925
Gundersen, J. N., *Lithologic classification of taconite from the type locality*, 563–573
Stratigraphy of the eastern Mesabi district, Minnesota, 1004–1029
on taconite types, Minn., 1011
Gushkin, G. G., and Prikhid'ko, P. L., on inclusions, 493
Gussow, W. C., on faults, 617
Gustafson, J. K., and Moss, A. E., on iron ore development, Labrador-Quebec, 1057
Gutzeit, G., on contact printing, 1303
Gypsum, 89, 98, 892, 901

Hägg, G., on Fe_2As_2, 1350
Hägg, G., and Sucksdorff, I., on pyrrhotite, 1347
Haffty, J., spectroscopic analyses by, 1333
Hall, R., with Butler, J. R., *Chemical characteristics of davidite*, 1541
Hallimond, A. F., on a visual microphotometer, 1305
Halloysite, 891, 1285, 1286
Tintic mining district, Utah (review), 1764
Ham, W. E., and Oakes, M. C., on manganite, 9
Hamburger, G. E., and Buerger, M. J., on tourmaline, 1548
Hamilton, J. C., spectroscopic analysis by, 146
Hammer, S., on a gravity anomaly, 474
Hannover-Fierro copper zinc district, New Mexico, 1247
Hansen, M., on gold-silver system, 1151
Hansen, M., and Anderko, K., Fe-S system, 1347
Haraldsen, H., on pyrrhotite, 1349
Harber, F., and Weiss, J., on hydrogen peroxide, 948
Harcourt, G. A., on arsenopyrite, 1354
Harder, E. C., on bauxite, 1656
Harrison, A. G., and Thode, H. G., on sulfur isotope fractionations, 1685
Harrison, J. B., on diabase, 1656
Harrison, J. M., on lead isotopes, 323
Harrison, W., review by, 1071
Hart, R. C., *et al.*, on conglomerate, 668
on Quirke Lake area, Ont., 908
Hartley, W. N., on inclusions, 497
Hartman, J. A., discussion by, 1313
discussion of a paper by, 1313
on ilmenite, 1064
Hatch, F. H., on veins, Kolar gold field, India, 1432
Hathaway, J. C., and Parker, C. C., determination of clay minerals by, 1489
Hauser, E. A., and Reynolds, H. H., on argillic alteration minerals, 1479
Hausmannite, 9, 22
Havenor, H. E., on jasperoids, 1517
Hawkes, H. E., on surface waters, 952
review by, 1567
Hawley, C. C., abstract by, 1339
Hawley, J. Z., on tellurides, 1474
Hayton, J. D., *The constitution of davidite*, 1030–1038
Haywood, J. K., analysis by, 40
Hazen, S. W., Jr., on manganese oxide, 30
Head, R. E., on sulfides, 1204
Headen, W. P., analyses by, 40
Heath Steele ore deposits, Newcastle, N. B., Canada, Geology, sulfur isotopes and the origin of the (Dechow), 539
temperature of mineralization, 820
Heavy minerals, alteration during deposition (discussion), 1759
analysis, U.S.S.R. (review), 1071
bauxite, Arkansas (discussion), 1313
conglomerate, Blind River, Ont., 672, 679
Connoquenessing sandstones, Pa., 1298
Idaho, blacksand placers, central Idaho, 789
niobium and tantalum-bearing minerals, 733
placers, Idaho, Elk City region (abstract), 1325
uraniferous conglomerates (discussion), 411
Hecht, —, and Kroupa, —, on pitchblende, 384
Hée, A., *et al.*, on granite, 384
Heinrich, E. W., on pegmatites, 638
Heinrich, E. W., and Klepper, M. R., and Jahns, R. H., on pegmatites, 638
Heinrich, E. W., and Levinson, A. A., on muscovite, 155

Heinrich, E. W., and Masterman, P. C., abstract by, 1332
Heinrich, E. W., and Olson, J. C., on pegmatites, 638
Heinrich, E. W., *et al.*, on ilmenorutile, 1192
Helke, A., on Nagyag gold deposit, Rumania, 1473
Hellner, E., on sulfides, 760
Hematite, 406, 468, 890, 951, 956, 1177
Hemimorphite, 1084, 1086, 1095, 1098, 1113
Hemimorphite-willemite relationship (discussion), 844
Hemley, J. J., on alteration minerals, 1479
Henderson, J. F., and Brown, I. C., on Yellowknife district, N.W.T., 1593
Hendricks, T. A., and Laird, W. M., on rancieite, 10
Henin, S., on serpentine, 155
Hercynian ore deposits, Rejuvenation of pitchblende in (Davidson), 383
Hernon, R. M., Jones, W. R., and Moore, S. L., on Hanover-Fierro intrusive, New Mexico, 1249
Herz, N., on metamorphic rocks, Conn., 112
Hess, F. L., and Larsen, E. S., on calc-silicate rocks, 1411
Hess, H. H., on orthopyroxene, 268
on ultrabasic rocks, 630
Hess, H. H., and Poldervaart, A., on exsolution, 266
Hessite, 1149, 1158, 1165, 1170, 1470
Hetaerolite, 12
Hewett, D. F., on hausmannite, 22
on zinc, 1086
Hewett, D. F., and Fleischer, M., *Deposits of the manganese oxides*, 1–55
Hewett, D. F., and Schaller, W. T., on braunite, 11
Hewett, D. F., and Webber, B. N., on manganese oxide, 30
Hewett, D. F., *et al.*, on celestite, 48
Heyding, R. D., and Calvert, L. D., on Co-As system, 1350
Heyl, A. U., *et al.*, on Upper Miss. Valley lead-zinc district, 1087
Higazy, R. A., on carbonatites, 737
Hildebrand, F. A., Carron, M. K., and Rose, H. J., Jr., on rhabdophane, 1545
Hill, P. A., discussion of a discussion by, 617
on faults, 617
Hill, V. G., on bauxite, 1656
Hillebrand, —., analysis by, 40
Hiller, J. E., and Probsthain, K., on arsenopyrite, 1353
Hiller, Th., on contact printing, 1303
Hills, R. C., on Spanish Peaks, Colo., 1625
Hilpert, S., and Dieckmann, Th., on $FeAs_2$ synthesis, 1350
Hilpert, L. S., and Freeman, V. L., on sandstone, 437
Hilpert, L. S., and Moench, R. H., *Uranium deposits of the southern part of the San Juan basin, New Mexico*, 429–464
Hinze, W. J., *Application of the gravity method to iron ore exploration*, 465–484
on a gravity minimum, 483
Histograms, thorium, uranium, and zirconium in bauxite, Ark., 1666
History, Arizona, mining (review), 418
Braden copper mine, Chile, 868
Economic Geology Publishing Co., i
geological engineering investigation, 1048
geological study, East Tintic district, Utah, 1116, 1119, 1123, 1140
Siberia (review), 852
geology 1800–50, U.S.S.R. (review), 1761
gold mining, Kolar field, India, 1430, 1443
salt-water body movement, Nassau Co., N. Y., 1739, 1747
science, reprint of V. I. Vernadskii's book (review), 1315
taconite, word usage, 564
Tintic and East Tintic mining districts, geological studies (review), 1762
Hobbs, S. W., on scheelite, Wyo., 1407
Hodge, E. T., on mine waters, 950
Hoekstra, H. R., and Fuchs, L. H., *The origin of thucholite*, 1716–1738
Holdridge, D. A., and Vaughan, F., on thermal analysis curve, 1288
Hollandite, 11, 46
Holmes, A., on granite, 384
on lead, 650
on Precambrian, India, 833, 834
Holmes, S. W., on Pronto mining area, Ont., 663, 908
on uranium, Blind River, Ont., 1755
Holyk, W., on sulfides, 1683
Hooker, —., analyses by, 1166
Hornblende, 347
chemical analyses, 269
Hornblendite, chemical analysis, 269
Horne, J. E. T., on pitchblende, 384
Hosking, K. F. G., on hydrothermal systems, 1479
Hosii, J., on sulfides, 1485
Hosterman, J. W., pH determination by, 619
Hot springs, manganese deposits, 39, 42
sulfur-mud deposit, Guatemala, 532
Houtermans, F. G., on lead, 650
Howd, F. H., on alteration, Tintic district, Utah, 1122
on jasperoid, 1516
Howell, F. H., and Molloy, J. S., *Geology of the Braden orebody, Chile, South America*, 863–905
Huanuni-Morococala region, Bolivia, 226, 239, 242, 248, 254, 577, 589

Hubbert, M. K., on rocks, 972
on terrain corrections, 477
Hubble, J. H., with Feulner, A. J., *Occurrence of strontium in the surface and ground waters of Champaign County, Ohio*, 176
Huber, N. K., on pH, 930
Huber, N. K., and Garrels, R. M., on oxidation potentials, 929
Huebnerite, 892
Huff, L. C., *et al.*, abstract by, 1329
Hulin, C. D., on granite, 979
on ore deposits, 807
Hume, G. S., on bitumen, 803
Humic acid from coalified logs as a guide to temperatures in Colorado Plateau sediments, Extractability of (Breger and Chandler), 1039
Hummel, B., and Lloyd, R. M., on cephalopod shells, 1050
Hungary, bauxites, radioactivity, 1655
titanium minerals (discussion), 619
Hunt, A. R., on inclusions, 487
Hunt, C. B., on Henry Mtns., Utah, 1625
on Mt. Taylor volcanics, New Mexico, 444
Hunt, C. B., McKelvey, V. E., and Wiese, J. H., on manganese oxide, 30
Hunt, E. C., North, A. A., and Wells, R. A., on niobium determination, 744
Hunt, J. M., Stewart, F., and Dickey, P. A., on organic material classification, 1717
Hurlburt, C. S., review of book by, 416
Hurley, P. M., *et al.*, on gneiss, 323
Hurst, V. J., discussion by, 610
discussion of a discussion by, 613
Hutchinson, G. E., on calcite, 953
Hutchinson, G. E., Deevey, E. S., Jr., and Wollack, A., on Eh of sediments, 930
Hydrocarbons, kolm deposits, Sweden, 704
metamorphism, 1718
Hydrogen peroxide, 929, 947
Hydrogen peroxide-oxygen gas couple, 929, 937, 940
Hydrogen sulfide, Sulfur mud deposit formed through bacterial transformation of fumarolic (Ljunggren), 531
Hydrohausmannite, 10
Hydrohetaerolite, 13
Hydrology (review), 854
engineering geology (review), 1318
Hydrozincite, 1084, 1086, 1093, 1096, 1113

Idaho, Genetic aspects of the monazite and columbium-bearing rutile deposits in northern Lemhi County (Anderson), 1179
Isotopic composition of lead and Precambrian mineralization of the Coeur d'Alene district (Long, Silverman, and Kulp), 645; discussion, 1565
manganese oxides, 35, 36
Idaho—Continued
mining districts having intrusive aphanites, 1626
placers, Elk City region (abstract), 1325
sulfides, mill feed sample, 117
sulfur isotopic ratios, 78, 86
Idaho batholith, age, 1201
Idaho blacksands, Nature and origin of central (Savage), 789
Igneous rocks (review), 621
Bathurst—Newcastle area, New Brunswick, 1683, 1698, 1700
Blind River uranium district, Ont., 1752
Boulder batholith, Mont., 64
Braden copper area, Chile, 872, 875, 901
Burgin mine, East Tintic district, Utah, 1530
Cassiar asbestos district, Brit. Columbia, 327
Coeur d'Alene district, Idaho, 647
Connecticut, north-central Conn., 113
East Tintic district, Utah, 1126
Garon Lake sulfide area, Que., 346
H. Steele mine area, New Brunswick, 540
Hanover-Fierro etc., intrusives, New Mexico, 1247, 1258
kodurites, India, 827
Kolar gold field, India, 1435
magmatic and non-magmatic ores (abstract), 1328
Miami area, Ariz., 557, 558
Mistassini district, Quebec, 314
ore deposits and igneous rocks, 807
ore districts, Bolivia, 223, 228, 591
ore groups and rock groups, 1275
porphyries, barren and productive intrusives, western U. S., 1622, 1628
San Juan basin, New Mexico, 444
sulfide ore content, 120, 122
White Pine district, Mich. (discussion), 406
Ikeda, N., on natural material AsS_3, 1347
Illinois, lead-zinc, Upper Miss. Valley district, 1087
sulfides, sulfur isotopic ratios, 78, 84, 86, 95
thorium-uranium concentration by milling bauxite, 1667
Illite, 155, 1299
Ilmenite, 13, 262, 1186, 1191, 1195, 1313, 1758
alteration (discussion), 1064
alteration in sediments (discussion), 618
alteration to "arizonite" (discussion), 843
Malaya, arizonite *vs.* ilmenite (discussion), 1068
rock deposits, origin, 641
Ilmenorutile, 1192, 1193
Inclusions, quartz coloration by inclusions, 368, 371, 372
sphalerite, freezing points of liquid inclusions (abstract), 1337

Inclusions in cassiterite and associated minerals (Little), 485
Index of geological periodicals (review), 849
India, Structural control and localization of gold-bearing lodes, Kolar gold field (Narayanaswami, Ziauddin, and Ramachandra), 1429
Structure and stratigraphy of the manganese deposits of Visakhapatnam and Srikakulam districts (Krishna Rao), 827
heavy minerals, Quilon (discussion), 1064
Indonesia, cassiterite, inclusions, 492, 504
Industrial minerals, Intriguing examples of geology applied to (Gillson), 629
Industrial minerals and rocks (review), 853
Infrared absorption studies, thucholite, 1729
Infrared spectra, oil pellets, 1730
Ingamells, C. O., analysis by, 319
Ingerson, E., on inclusions, 501
on ore thermometry, 1648
Intergrowths, silver minerals in galena, 759, 768
Intrusion and ore deposition in New Mexico (Belt), 1244
Intrusive porphyry, Differences between barren and productive (Stringham), 1622
Intrusive rocks near Globe-Miami, Arizona, Compositional variation of alkali feldspars in some (Kuellmer), 557
Invariant point of arsenopyrite, 1369
Inversion, Ag_2S, 768, 770, 786
hessite, 1158
Iofa, Z. A., Shimshelevich, Ya. B., and Andreeva, E. P., on oxygen, 947
Iowa, lead-zinc, Upper Miss. Valley district, 1087
Ipatiev, V., and Nikolaev, V., on synthetic arsenopyrite, 1353
Ireland, bauxite, basalt parent rock, 1662, 1663
Iron, molybdenum test interference, 1239
ores, niobium content, 741, 743
oxidation-potential control by iron minerals, 951
sulfides, oxidation electrode potential, 1222, 1225
taconite, Minn., 563
U.S.S.R., Ukraine, siliceous formations (review), 852
Iron formation, Mistassini Territory, Quebec, Canada, Composition and age of the Temiscamie (Quirke, Goldich, and Krueger), 311
Iron ore exploration, Application of the gravity method to (Hinze), 465
Iron ores, Clay minerals associated with the Lake Superior (Bailey and Tyler), 150
Iron River iron range, Mich., clay minerals with ores, 172
Irradiation and quartz color, 367
Isachsen, Y. W., on Continental No. 1 mine, Utah, 936
Isochlors, 1739, 1749
Isotope fractionation in sulfide mineralization, Sulfur (Gavelin, Parwel, and Ryhage), 510
Isotope investigation of the gold-quartz deposits of the Yellowknife district, Sulfur (Wanless, Boyle, and Lowdon), 1591
Isotopes, geology, journal (review), 1765
lead, Coeur d'Alene, Idaho, 645, 1565
dating and origin of lead deposits (abstract), 1331; (discussion), 840
sulfur, magmatic and hydrothermal deposits (abstract), 1330
mineral deposits (discussion), 206
uranium deposits (abstract), 1329
Isotopes and ore deposits, Sulfur (Ault and Kulp), 73
Isotopes and the origin of the Heath Steele ore deposits, Newcastle, N. B., Canada, Geology, sulfur (Dechow), 539
Isotopes and the origin of the sulfide deposits of the Bathurst-Newcastle area of northern New Brunswick, Sulfur (Tupper), 1676
Isotopic composition of lead and Precambrian mineralization of the Coeur d'Alene district, Idaho (Long, Silverman, and Kulp), 645; discussion, 1565
Italy, bauxite, potassium content, 1671
cassiterite, inclusions, 493
sulfides and sulfates, sulfur isotopic deviations, Sardinia, 521
Iwai, S., Takeshi, H., and Ossaka, J., on nacrite, 156
Iwao, S. on alunite, 155

Jackpile uranium deposit, New Mexico, 450
Jackson, F. L., *et al.*, on sulfur, 765
Jackson, G. C. A., on N'Changa mine, Northern Rhodesia, 810
Jackson, M. L., *et al.*, on chlorite, 161
Jacobs, J. A., Russell, R. D., and Wilson, J. T., review of book by, 621
Jacobs, M. B., on strontium, 177
Jacobsite, 12
Jaffe, H. W., *et al.*, on monazite, 1200
Jahns, R. H., *et al.*, on pegmatites, 638
Jamaica, bauxite, limestone parent rock, 1662, 1663
James, D. H., on asbestos, 631
James, H. L., on stratigraphy, iron districts, Mich., 320
James, T. C., and McKie, D., on talc, 154
Japan, black-ore deposits, 98
chlorite-montmorillonite, interstratifications, 164

Japan—*Continued*
pyrite, massive deposits in eugeosynclines (abstract), 1327
sulfur isotopic ratios, 84, 89, 97
todorokite, 11
Jarosite, 582, 1517
Jaskolski, S., on dacite, Bolivia, 223
Jasperoid, 724, 1137, 1516, 1533
Jayaram, B., on a map, Kolar gold field, India, 1432
Jefferson City mine, Tennessee, Ore deposits and sedimentary features (Kendall), 985
Jeffrey, H. E., on Nundydroog gold mine, India, 1433
Jeffrey, P. G., on tungsten, 1424
Jenkins, G. F., on asbestos, 630
Jenney, C. P., abstract by, 1326
Jenney, W. P., on stibnite, 1551
Jensen, E., on pyrrhotite, 1349
Jensen, M. L., *Centenary of Waldemar Lindgren*, iii-vii
discussion of article by, 206
on hydrothermal ore deposits, 1622
on mass spectrometric analysis, 545
on sulfides, 513
on sulfur isotopes, 74, 1677
Jicha, H. L., Jr., on manganese oxide, 24
Johnsen, A., on inclusions, 497
Johnson, A. C., and Trengove, R. R., on manganese oxides, 31
Johnson Camp, Arizona, Chalcopyrite blebs in sphalerite at (Baker) 387
Johnson, W. D., Jr., on pegmatites, 638
Joints, Baie Verte area, Newfoundland (communication), 400
Braden copper district, Chile, 880
Cassiar asbestos deposit, 331, 333, 336
Joklik, G. F., *The discovery of a copper-zinc deposit at Garon Lake, Quebec*, 338-353
Jolliffe, A. W., on Yellowknife district, N.W.T., 1593
Jones, H. A., Langmuir, I., and Mackay, G. M. J., on vapor pressures of iron, 1367
Jones, L. H. P., and Milne, A. A., on birnessite, 10
Jones, W. A., on greisen, 1485
Jong, W. F. de, on loellingite structure, 1350
Jonker, W. P. A., on As-S system, 1352
Joralemon, I. B., reply to a discussion by, 402
Joubin, F. R., *Comments regarding the Blind River (Algoma) uranium ores and their origin*, 1751-1756
on Blind River uranium district, Ont., 908, 1751
Journal of Petrology (review), 1765
Junner, N. R., on Nsuta manganese deposit, Ghana, 280
Jurassic, Morrison formation, alteration, New Mexico (discussion), 1758
San Juan basin, New Mexico, 432

Kaiser, E. P., on metamorphic segregation, 1180
Kaku, I., on sulfides, 1206
Kalgoorlie gold deposit, telluride minerals, 1162
Kalgurli, N., analysis by, 1175
Kalousek, G. L., and Muttart, L. E., on asbestos, 333
Kansite, 1350
Kaolin, Kaolinitic sediments in peninsular Florida and origin of the (Pirkle), 1382
Kaolinite, 66, 71, 154, 171, 534, 1299, 1384, 1390, 1479, 1489, 1498
Kaolinitic sediments in peninsular Florida and origin of the kaolin (Pirkle), 1382
Kaplan, I. R., on Eh of hot spring water, 930
Karkhanavala, M. D., discussion by, 843
discussion of communication by, 1068
on arizonite, 1069
on ilmenite, 1064
on pseudobrookite, 844
Karkhanavala, M. D., and Momin, A. C., on ilmenite, 1064
Karkhanavala, M. D., Momin, A. C., and Rege, S. C., on ilmenite, 1064
Kašpar, J. V., on nacrite, 156
Katanga, copper deposits, 712
Kato, T., on black-ore deposits, 98
Kautzsch, E., on Kupferschiefer, Germany, 705
Keith, C. N., on Kolar gold field, India, 1433
Keith, M. L., and Tuttle, O. F., on thermal analysis apparatus, 761
Keller, W. D., on limestone, 1656
Keller, W. D., Wescott, J. F., and Bledsoe, A. O., on topographic highs, 1300
Kelley, K. K., on bismuth, 765
on pyrite, 1223
Kelley, V. C., and Silver, C., on manganese oxides, 47
Kelly, F. J., Kerns, W. H., and Parker, B., on Copper Mtn. scheelite deposit, Wyo., 1426
Kelly, W. C., communication by, 1303
Kendall, D. L., *Ore deposits and sedimentary features Jefferson City mine, Tennessee*, 985-1003
Kendrick, W. L., on coronadite, 12
Kennedy, G. C., on silica, 598
on volatiles, 1257
on water, 505
Kennedy, V. C., abstract by, 1339
on ground water, Potosi, Wis., 1098
Kentucky, coal, chemical analysis, 1041
galena, sulfur isotope ratios, 87
Kernite, 633

Kerr, P. F., on alteration, 1479
on dickite, 153
on kaolinite, 71
on manganese oxide, 30
on mineralization temperature, Bolivia, 593
Kerr, P. F., and Hamilton, P. K., on mica clays, 155
Kerr, P. F., and Kulp, J. L., on pitchblende, 646
Kerr, P. F., Main, M. S., and Hamilton, P. K., on nacrite, 157
Kervella, F., on uranium, 1564
Kesler, T. L., on clays, 635
on kaolinitic beds, 1401
Kidd, F. A., on sands, 803
Kiersch, G. A., and Keller, W. D., on Ca-montmorillonite, 635
Kilburn, L. C., *Nickel, cobalt, copper, zinc, lead, and sulfur contents of some North American base-metal sulfide ores*, 115-137
King, C. A. M., review of book by, 1071
King, H. F., on syngenetic ore bodies, 1275
King, P. B., *et al.*, on manganese, 17
King, W. H., Soulé, J. H., and Trengove, R. R., on manganese oxide, 30
Kinoshita, K., on black-ore deposits, 98
Kitson, A. E., on Nsuta manganese deposit, Ghana, 280
Kitson, A. E., and Wyllie, B. K. N., on manganese, 280
Klages, M. G., and White, J. L., on chlorite, 161
Klepper, M. R., on uranium, 59
Klohn, C., on Porfiritica formation, Chile, 869
Knight, C. L., discussion of a paper by, 615
on ores, 805
on sulfides, 553, 1683
Knight, C. W., on mineral deposits, Blind River, Ont., 672
Knopf, A., on Boulder batholith, Mont., 58
on Calumet Eureka mine, Calif., 729
on cassiterite, 1481
on igneous rock textures, 1623
Knorring, O. von, Brindley, G. W., and Hunter, K., on nacrite, 156
Koch, S., and Grasselly, G., on sulfides, 1205
Koen, G. M., on uraninite, 689
Königsberger, J., and Müller, J. W., on inclusions, 493
Koern, V., on system Ag-Te, 1149
Kolar gold field, India, Structural control and localization of gold-bearing lodes (Narayanaswami, Ziauddin, and Ramachandra), 1429
Kolm, 704
Kolthoff, I. M., and Stenger, V. A., on calcite dissolution, 953
Konta, J., on quartz, 487
Kopp, O. C., and Kerr, P. F., on arsenopyrite, 1354
Korzhinsky, D., on Gibbs phase rule, 1461
review of book by, 1566
Koschmann, A. H., *et al.*, on Cripple Creek area, Colo., 1625
Kostov, I., on bonchevite, 762
Kozlowski, R., on diorite porphyry, Bolivia, 223
Kozlowski, R., and Jaskolski, S., on tin-silver ores, Bolivia, 580
Kozlowski, R., and Smulikowski, —, on rhyodacite, Bolivia, 223
Kracek, F. C., on arsenic, 1352
on silver sulfide, 762
Kracek, F. C., and Ksanda, C. J., on tellurides, 1149
Kracek, F. C., and Rowland, W. R., on system Ag-Te, 1149
Kraus, E. H., Seaman, W. A., and Slawson, C. B., on seamanite, 151
Krauskopf, K. B., on manganese, 946
on zinc, 1002
Krehbiel, R., and Spinks, J. W. T., on $SrSO_4$ solution, 206
Kreiter, V. M., *et al.*, review of monograph by, 1761
Krennerite, 1148, 1159, 1168, 1464, 1467, 1468, 1474
Kreulen, D. J. W., on organic carbon, 1042
Krieger, M. H., on Gore Mtn. area, N. Y., 255
Krishna Rao, J. S. R., *Structure and stratigraphy of the manganese deposits of Visakhapatnam and Srikakulam districts, India*, 827-834
Krishman, M. S., on Precambrian structure, India, 833
Krishnaswamy, D. S., and Amstutz, G. C., abstract by, 1340
Krueger, H. W., with Quirke, T. T., Jr., and Goldich, S. S., *Composition and age of the Temiscamie iron-formation, Mistassini Territory, Quebec, Canada*, 311
Krumbein, W. C., and Garrels, R. M., on pH, 929
on siderite, 619
Krumbein, W. C., and Sloss, L. L., on tetrahedron in end-member classifications, 569
Krotov, B. P., on bauxite, Urals, 1289
Krutov, G. A., review of book by, 1570
Krynine, D. P., on sand, 640
Kuellmer, F. J., *Compositional variation of alkali feldspars in some intrusive rocks near Globe-Miami, Arizona*, 557-562
on feldspars, 557
Kullerud, G., on differential thermal analysis apparatus, 1356
on sphalerite, 84, 1499
on sphalerite geothermometer, 818

Kullerud, G., and Neumann, H., on sphalerite, 819
Kullerud G., and Yoder, H. S., Jr., on pyrite invariant point, 1349
Kullerud, G., Padget, P., and Vokes, F. M., on sphalerite separation, 819
Kulp, J. L., Ault, W. V., and Feely, H. W., on sulfides, 1688
on sulfur isotopes, 73, 513
Kulp, J. L., Bate, G. L., and Giletti, B. J., on pitchblende, 688
Kulp, J. L., Broecker, W. S., and Eckelmann, W. R., on pitchblende, 384
Kulp, J. L., *et al.*, on lead, 655
on sulfides, 93
Kulp, J. L., Holland, H. D., and Volchok, H. L., on alpha counting, 376
Kulp, J. L., with Ault, W. U., *Sulfur isotopes and ore deposits*, 73
Kulp, J. L., with Long, A., and Silverman, A. J., *Isotopic composition of lead and Precambrian mineralization of the Coeur d'Alene district, Idaho*, 645; discussion, 1565
Kumke, C. A., *et al.*, on manganese oxide, 30
Kuranti, G., on gold, 1646
Kuznetzow, S. J., on Eh of sediments, 930

Labrador, iron formation, negative gravity anomalies, 469
iron ore exploration and development, 1056
Labuntzov, A. N., on carburan, 1717
Laccoliths, Hanover district, New Mexico, 1249
Lacroix, A., on garnet coronas, 268
La Forge, L., on "shear zone," 614
Laisvall sulfide district, Sweden, sulfur isotope fractionation, 527
Lake Superior iron ores, Clay minerals associated with the (Bailey and Tyler), 150
Lakes, sulfurous bottom muds, Guatemala, 531
Wisconsin, Eh-pH measurements of lake waters and sediments, 938
Lakin, H. W., Almond, Hy, and Ward, F. N., on thiocyanate method, 1232
Landes, K. K., on tourmaline, 598
review of book by, 417
Lang, A. H., on uranium, 1755
Lange, O. K., Ivanova, M. F., and Lebedeva, N. B., review of book by, 852
Lanthanite, 1545
Lanthanons, occurrence in davidite, 1030, 1034
Lanthanum, carbonatite deposits, Congo, 738
Lapham, D. M., abstract by, 1334
Lapparent, A. F., de, on limestone, 1656
Larsen, E. S., Jr., and Schmidt, G. R., on Idaho batholith, 1201
Larsen, E. S., Jr., *et al.*, on lead ore, Idaho, 646
Lasky, S. G., on Hanover-Fierro intrusive, New Mexico, 1249
on manganese veins, 24
Lasky, S. G., and Loughlin, G. F., on blebs, 395
Lasky, S. W., and Webber, B. N., on manganese oxide, 30
Laterites, analyses, carbonatite-derived deposits, 741, 742
Latimer, W. M., on free energy of formation, 1213
on oxidation potential (Eh), 937
on smithsonite, 1092
on titanium, 619
Lauw-Zecha, A. B., Lord, S. S., and Hume, D. N., on niobium determination, 744
Lavas, pillow structure, Kolar gold field, India, 1435
Lavelle, —, and Rice, L., on Kolar gold field, India, 1431
Laverty, R. A., and Gross, E. B., on uraninite, 446
Lawrence, L. J., *et al.*, on davidites, 1542
Layered rocks, Patterns to ores in (Bain), 695
Lazarenko, E. K., review of textbooks by, 851
Lea, E. R., and Rancourt, C., on sulfides, 1684
Leaching, Citronelle sediments, Florida, 1401
tuffs, Silver Reef, Utah (communication), 838
Lead, acid rocks and lead deposits, 1280
Arkansas, zoning of veined deposits (communication), 1551
dating of lead deposits by isotopes (discussion), 840
England, Pennine area (discussion), 205
isotopes, 1689, 1706
dating and origin of lead deposits (abstract), 1331
manganese oxide content, 28
Nev., 33, 35, 47
New Brunswick, anomalous leads (discussion), 841
Utah, East Tintic district, 1134, 1509
Burgin mine, Utah, 1535
jasperoid deposits, 1516
sulfate, sulfide oxidation potential effects, 1219
sulfides, lead-sulfur isotopic ratios, compared, 92
system Ag_2S-Bi_2S_3-Pbs, 759
Lead and Precambrian mineralization of the Coeur d'Alene district, Idaho, Isotopic composition of (Long, Silverman, and Kulp), 645; discussion, 1565
Lead and sulfur contents of some North American base-metal sulfide ores, Nickel, cobalt, copper, zinc (Kilburn), 115

Lead deposits in limestone, Supergene alteration of zinc and (Takahashi), 1083
Lead-uranium ratios in uraninite, Shinarump conglomerate, Ariz., 146
Lee, D. E., on pyrophanite, 13
Leiberger, —., on pitchblende, 384
Leist, J. W., on preparation of AgS, 1222
Leith, C. K., on iron ore bodies, 150
Leith, C. K., Lund, R. J., and Leith, A., on iron formations, 320
Lekas, M. A., and Dahl, H. M., on Continental No. 1 mine, Utah, 936
Lemberg, J., on topaz, 1497
Leon, Spain, Bauxite, deposit in the Paleozoic of (Font-Altaba and Closas M.), 1285
Leonard, B. F., communication by, 1306
reflectivity measurements by, 1309
Leonard, R. J., on alunite, 155
Leptochlorite, 162
Leucoxene, 843, 892, 1067, 1069
Leutwein, F., and Herrmann, A. G., on silver ores, 759
Levin, S. B., analyses by, 269
on garnet rocks, 257
on manganese dioxide, 303
Lévy, C., and Prouvost, J., on photomultiplier tubes, 1306
Libbey, F. W., Lowry, W. D., and Mason, R. S., on basalt, 1656
Liebenburg, W. R., on detrital minerals, 141
on Witwatersrand conglomerate deposits, 714
Lillianite, 762
Lima-de-Faria, J., on metamict minerals, 1542
Lime, 637
Limestone, Supergene alteration of zinc and lead deposits in (Takahashi), 1083
alteration by dolomitization, Tenn., 1000
barite in limestone, 632
bauxitic parent rocks, 1656, 1660, 1669
Goodsprings district, Nevada, spectroscopy, 1110
San Juan basin, New Mexico, 432
uranium deposits, San Juan basin, New Mexico, 448
Limonite, 367, 582, 890, 1665
Lind, S. C., on methane, 1721
Lindgren, Waldemar, Centenary of (Jensen), iii
on auriferous gravels, 697
on celestite, 180
on colloids, 631
on copper, Sedalia mine, Colo., 1421
on cordierite, 351
on granites, 557
on kaolinite, 1480
on manganese oxides, 39
on mathematics, iv
on mineralization, Bolivia, 593
on Morenci intrusive, Ariz., 1625
Lindgren, W., and Abbott, A. C., on tin-silver ores, Bolivia, 580
Lindgren W., and Bastin, E. S., on Braden copper deposit, Chile, 865
Lindgren, W., and Creveling, —., on sericite, 253
Lindgren, W., and Graton, L. C., on Magdalena ores, N. Mex., 50
Lindgren, W., and Hillebrand, W. F., on coronadite, 12
Lindgren, W., and Loughlin, G. F., on East Tintic district, Utah, 1120
on zoning, 1511
Lindgren Law of Constant Volume, 195
Lindgren were here, If (Graton), 192
Lindsay, J. K., on Mysore gold mine, India, 1433
Lipp, H. H., volumetric analysis by, 147
Lithiophorite, 10, 280, 286, 287, 294, 295, 297, 301
Lithologic classification of taconite from the type locality (Gundersen), 563
Little, W. M., *Inclusions in cassiterite and associated minerals*, 485–509
Lizardite, 159
Ljunggren, P., *A sulfur mud deposit formed through bacterial transformation of fumarolic hydrogen sulfide*, 531–538
on volcanic ash, 536
Llallagua-Oruro tin-silver districts, Bolivia, 224, 231, 236, 240, 244, 247, 252, 574, 580, 586, 588
Locke, A., on oxidation products, 1204
Lodes, Kolar gold field, India, Structural control and localization of gold-bearing (Narayanaswami, Ziauddin, and Ramachandra), 1429
Loellingite, 1346, 1348, 1350, 1354, 1365, 1381, 1648
Logs as a guide to temperatures in Colorado Plateau sediments, Extractability of humic acid from coalified (Breger and Chandler), 1039
Lomský, J., review of book by, 849
Long, A., Silverman, A. J., and Kulp, J. L., *Isotopic composition of lead and Precambrian mineralization of the Coeur d'Alene district, Idaho*, 645–658; discussion, 1565
discussion of a paper by, 1565
Long Island, N. Y., Position of the salt-water body in the Magothy (?) formation in the Cedarhurst-Woodmere area of southwestern Nassau County (Lusczynski and Swarzenski), 1739
Longwell, C. R., on Muddy Creek formation, 46
Longwell, C. R., Knopf, A., and Flint, R. F., on clays, 634
Lopez, de Azcona, J. M., on pegmatite, 384
Lordsburg copper-zinc district, New Mexico, 1262, 1263

Lost River tin mine, Alaska, Metallization and post-mineral hypogene argillization (Sainsbury), 1478
Loughlin, G. F., and Koschmann, A. H., on Granite Mtn. pluton, New Mexico, 1258
Lovejoy, D. W., on Lone Mtn. porphyry, Nev., 1628
Lovering, T. G., on iron oxides, 1655
on sphalerite, 819
Lovering, T. S. on alteration, 903
on silica, 596
Lovering, T. S., and Goddard, E. N., on Colo. Mineral Belt, 1425
on ore types, 1277
Lovering, T. S., and Morris, H. T., *The Chief Oxide-Bearing area discoveries, East Tintic district, Utah; A case history. Part I. U.S. Geological Survey studies and exploration*, 1116–1147
Lovering, T. S., and Tweto, O., on sericite, 596
Lovering, T. S., *et al.*, on alteration, 1479
Tintic district, Utah, 1122
on East Tintic district, Utah, 1512
on jasperoid, 1517
Lovering, T. S., Sokoloff, V. P., and Morris, H. T., on geochemical prospecting, 1513
on pyritic alteration, 1124
Lowdon, J. A., with Wanless, R. K., and Boyle, R. W., *Sulfur isotope investigation of the gold-quartz deposits of the Yellowknife district*, 1591
Lueshite, 734
Lukesh, J. S., on arsenopyrite, 1353
Lusczynski, N. J., and Swarzenski, W. V., *Position of the salt-water body in the Magothy (?) formation in the Cedarhurst-Woodmere area of southwestern Nassau County, Long Island, N. Y.*, 1739–1750
Lynd, L. E., discussion by, 1064
on titaniferous magnetite, 640
Lynd, L. E., *et al.*, on heavy minerals, 1066

McAlister, A. L., on Keymet lead deposit, New Brunswick, 841
on sulfides, 552, 1683
McAlister, D. A., on zoning, 1551
McAnulty, W. N., on fluorite, 637
MacChesney, —., and Muan, —., on pseudobrookite, 1070
Macdiarmid, R. A., abstracts by, 1337, 1340
McDowell, J. R., on Marquette trough, Ont., 1562
on Mississagi quartzite, Ont., 907
MacIvor, R. W. E., analysis by, 1171
on native tellurium, 1171
Mackay, R. A., Greenwood, R., and Rockingham, J. E., on granites, 733
McKee, E. D., *et al.*, on Morrison formation New Mexico, 461
McKelvey, V. E., on uranium, 354
McKelvey, V. E. and Carswell, L. D., on phosphorites, 354
McKelvey, V. E., Wiese, J. H., and Johnson, V. H., on manganese oxide, 30
Mackenzie, R. C., on thermal analysis curve, 1288
McKeown, F. A., and Klemic, H., on apatite, 355
Mackin, J. H., and Schmidt, D. L., on cuxenite, 142
McKinney, C. R., *et al.*, on the mass spectrometer, 1598
McKinstry, H., correction to paper by, 1314
on Cu-Fe-As-S system, 1352
on fracturing, 244
reviews by, 620, 848
McKinstry, H. E., and Kennedy, G. C., on sulfur, 600
McKinstry, H. E., and Noble, J. A., on Rio Blanco formation, Peru, 969
McLaughlin, D. H., *et al.*, on mantos, 982
McMurdie, H. F., on ramsdellite, 280
McMurdie, H. F., and Golovato, E., on gamma-MnO_2, 280
Macnamara, J., and Thode, H. G., on sulfur isotopes, 512, 1597, 1685
Magdalena copper-zinc district, New Mexico, 1258
Magma copper mine, Arizona, sulfide oxidation study, 933
Magmas, carbonatite magma, 1200
Magmatic segregation, titaniferous magnetites, 641
Magnesite, crystalline deposits, origin (abstract), 1338
Magnetic surveys, aeromagnetic survey, Garon Lake, Que., 342
ilmenite, Allard Lake, Que., 641
Magnetite, 264, 316, 334, 342, 350, 468, 568, 572, 641, 890, 921, 951, 956, 1007, 1016, 1020, 1177, 1186, 1191, 1195, 1309, 1311, 1519
geophysical prospecting (abstract), 1335
New Mexico, Hanover-Fierro deposits, 1247
Pennsylvania, Cornwall deposit (abstract), 1334
Magnetoplumbite, 12
Magothy (?) formation in the Cedarhurst-Woodmere area of southwestern Nassau County, Long Island, N. Y., Position of the salt-water body in the (Lusczynski and Swarzenski), 1739
Maine, Blue Hill area, metamorphism, 351
Mair, J. A., *et al.*, on monazite, 1562
on age, Blind River uranium deposits, Ont., 922
Maise, C. R., on spillways, 707
Malachite, 891, 897

Malaya, cassiterite, inclusions, 490
ilmenite, alteration (discussion), 843
ilmenite *vs.* arizonite (discussion), 1068
Manganese, Arkansas, gold-silver content, Polk Co. (communication), 1757
Burgin mine, Utah, 1535
ores, niobium content, 741, 743
Manganese deposits of Visakhapatnam and Srikakulam districts, India, Structure and stratigraphy of the (Krishna Rao), 827
Manganese oxides, Deposits of the (Hewett and Fleischer), 1
East Tintic district, Utah, 1517, 1524, 1534
gamma-MnO_2, 301, 304
rho-MnO_2, 303, 305, 306
Manganese oxides and associated minerals of the Nsuta manganese deposits, Ghana, West Africa (Sorem and Cameron), 278
Manganite, 9
Manganosite, 7
Manitoba, nickel, Thompson-Noak Lake belt (abstract), 1327
sulfides, mill-feed sample, 117
sulfur isotopic ratios, 78, 84
Mantos, Bristol silver mine, Nevada (abstract), 1337
Morococha district, Peru, 968, 978, 980, 982
Manz, O. W., on clays, N. Dak., 635
Mapping, East Tintic district, Utah, 1513, 1515
Maps, Alaska, Lost River tin mine, 1480
Alum shale mineralization, Sweden, 703
Bathurst-Newcastle area, New Brunswick, 1678
Blind River area, Ont., 661
uranium ore shoot, Ontario, 719
Bolivia, ore deposits, 219
Braden Copper Co. facilities, Chile, 866
Cassiar asbestos district, British Columbia, 328
Coeur d'Alene district, Idaho, 646
Colorado Plateau, uranium deposits, 721
Connecticut, north-central Conn., 103
East Tintic district, Utah, 1118
East Vermilion Cliffs area, Ariz., 139
Florida, kaolinitic sediments, 1383
Franklin-Sterling Hill mine area, New Jersey, 82
Garon Lake sulfide district, Que., 339
Georgia, gamma isorad map, Culloden area, 611
Germany, Kupferschiefer basin, mineralization, 706
Gore Mtn. region, N. Y., 256
Idaho, blacksand placer deposits, 790
intrusives, petrologic features, New Mexico, 1250, 1259
Jefferson City district, Tenn., 986
Kolar gold field, India, 1431
Lake Ixpaco, Guatemala, 532
Maps—*Continued*
Long Island, N. Y., 1740
Mercer formation, section localities, Pa., 1292
Mesabi district, Minn., 1005
mining districts, western U. S., 1624
monazite-columbium-rutile deposits, Lemhi Co., Idaho, 1181
Morococha district, Peru, 963
Orange Free State, gold ore shoots, 717
Quebec, Mistassini district, 313
San Juan basin, New Mexico, 431
scheelite, Colo-Wyo., 1408
Sierra Nevada, auriferous gravels, Calif., 698
subsurface mapping (review), 1317
United States, manganese oxides, western U. S., 23
Visakhapatnam and Srikakulam manganese deposits, India, 828
Witwatersrand, gold ore shoot pattern, 715
Marcasite, 78, 81, 447, 576, 595, 1348, 1471, 1553
oxidation electrode potential, 1226
Markham, N. L., *Synthetic and natural phases in the system Au-Ag-Te*, 1148–1178, 1460–1477
discussion by, 844
Marquette iron range, Mich., clay minerals with ores, 171
Marsh, O. T., communications by, 201, 1555
Martens, J. H. C., on Citronelle sediments, Fla., 1400
Martin, C., abstract by, 1338
Martin, H. A., on rocks, Kolar gold field, India, 1433
Maryland, Baltimore gneiss, age, 324
ilmenite alteration in clays (discussion), 618
Marzys, A. E. O., on niobium, 744
Maslenitsky, I., on gold, 1646
Mason, B., on oxidation potential, 929
Massachusetts, Boston area, topographical history (review), 620
Massicot, 1101, 1102, 1114
Mathis, R. W., on scheelite, Gillespie Co., Texas, 1427
Matildite, 759, 769, 771, 780, 786
Matsubara, A., and Takubo, J., on sulfides, 1204
Mawdsley, J. B., and Norman, C. W. H., on Chibougamau series, Quebec, 315
Maxwell, J. A., analyses by, 332
Mayne, K. I., Lambert, R., and York, D., on granite, 384
Mead, W. J., on shear planes, 242
on syenite, 1656
Mellor, E. T., on gold, 141
on Rand conglomerate, 699
Melonite, 1173
Memorial, Lindgren, W., iii

Mercer clay, Relationship between the stratigraphy and petrography of Pottsville sandstones and the occurrence of high-alumina (Williams), 1291
Mercury, Arkansas, zoning of veins (communication), 1551
Merrett, F. B., on nagyagite, 1173
Mertie, J. B., Jr., on "monazite belts," 613
on placers, 794
Mesabi district, Minnesota, Stratigraphy of the eastern (Gundersen), 1004
Mesabi iron range, Minn., clay minerals with ores, 173
Meschter, D. Y., on W. Wilson uranium mine, Mont., 59
Metal porphyrin, 797
Metallization and post-mineral hypogene argillization, Lost River tin mine, Alaska (Sainsbury), 1478
Metallogenesis, 806, 814
Metallogenetic epochs, U.S.S.R., Chatkalsk-Kuraminsk Mtns. (review), 849
Metallogenetic provinces, tungsten, Colo.-Wyo., 1424, 1427
uranium, Ontario, 1755
Metals, accumulation in rocks (review), 1568
aluminum, radioactivity (communication), 1060, 1061
Metamicts, brannerite, Ontario, 920
Metamorphic rocks (review), 621
Coeur d'Alene district, Idaho, 647
Connecticut, north-central Conn., 112
Garon Lake sulfide area, Que., 339, 347
Grenville complex, Mistassini district, Quebec, 317
H. Steele mine area, New Brunswick, 540
Kolar gold field, India, 1434, 1436, 1445
rutile deposits, Idaho, 1181
sulfur isotopes, Yellowknife district, N. W. T., 1600
taconites, Minn., 565
Visakhapatnam and Srikakulam manganese districts, India, 828, 829
Metamorphism, 195
Blind River, area, Ont., 661, 676, 689
Cassiar asbestos area, Brit. Columbia, 327, 336
clay, Portilla de Luna, Spain, 1289
coal and oil, 1718
columbium-rutile district, Idaho, 1198
garnet ore, Barton mine, N. Y., 257, 271
Garon Lake sulfide area, Que., 352
H. Steele mine area, New Brunswick, 540
Mesabi Range, Minn., 1012
"metamorphic water," 805, 807
mineral assemblages, 1460
Morococha district, Peru, 964, 967
rocks, Kolar gold field, India, 1441
Metamorphism—*Continued*
scheelite deposits, Colo.-Wyo., 1406, 1415, 1424
skarn-tin deposits, 486, 493, 499
Yellowknife gold district, N. W. T., 1592, 1594
Meteorites, sulfur isotope standard, 1597
Meteorology, textbook (review), 207
Method for the determination of molybdenum in soil and rock, New geochemical (Perry), 1232
Meulen, J. ter, on bauxite, 1656
Mexico, fluorite, Coahuila, 635, 637
galena, sulfur isotopic ratios, 86
manganese, Baja Calif., 37, 38
Meyer, F. H. *et al.*, on kansite, 1350
Meyer-Abich, H., on Lake Ixpaco, Guatemala, 531
Mica, 1484, 1485
Michel-Lévy, A., and Wyart, J., on topaz, 1500
Michigan, clay minerals, 158, 171
copper, Calumet & Hecla conglomerate, 697
White Pine deposit (discussion), 402
iron, Gogebic district, clay minerals with ores, 172
iron formation, chemical analysis, 319
sulfides, mill feed samples, 118
Microlite, 733
Microscopic analysis, Method of mounting minute particulate samples of opaque minerals for quantitative (Dillinger and Sclar), 187
Microscopy, arsenopyrite-loellingite, 1357
heating stage, 488
ores, gold-uranium, conglomerate deposits (review), 1074
Middlemiss, C. S., on kodurites, 827
Mielenz, R. C., Greene, K. T., and Schieltz, N. C., on pozzolans, 637
Miesch, A. T., on black calcite, 24
Miller, A. M., and Parry, M., review of book by, 207
Miller, D. N., Jr., on feldspar, 1758
Miller, D. S., and Kouvo, O., lead age determination by, 85
Miller, L. J., abstract by, 1327
Miller, R. B., this index prepared by, 17
Miller R. L., on glauconite, 17
Miller, W. J., on garnet deposits, N. Y., 257
Milling, bauxite, thorium and uranium concentration by milling, 1667
Mineral exploration, Critical remarks on the genesis of ore as applied to future (Sales), 805
Mineral industry, British Isles, nonferrous mining (review), 854
rocks and industrial minerals (review), 853
tin, statistical year book (review), 1073

Mineral resources (review), 848
cobalt (review), 1570
gems, North America (review) 1073
industrial minerals and rocks (review), 853
Mineralization, Sulfur isotope fractionation in sulfide (Gavelin, Parwel, and Ryhage), 510
alteration relation to uranium ore, Mont., 71
Blind River area, Ont., *662*, 672
Bolivia, 218, 583, 591, 594, 599
Braden orebody, Chile, 864, 883, 893, 899
Burgin mine, Utah, 1533
Coeur d'Alene district, Idaho, 648
copper, Congo-Rhodesian mineral belt, 710, 712
Michigan, Calumet & Hecla conglomerate, 697
White Pine deposit (discussion), 402, 405, 408
Northern Rhodesia, 805
Virginia, Catoctin formation (abstract), 1325
East Tintic district, Utah, 1511
gold, Kolar field, India, 1441, 1454
gold and arsenopyrite, 1646, 1648
H. Steele mine area, New Brunswick, 539, 548
Japan, black-ore deposits, 98
lead, isotopes of lead, origin and dating of deposits (abstract), 1331
Missouri, Decaturville disturbance (abstract), 1340
Morococha district, Peru, 968
ores, Silver Reef, Utah (communication), 837
pitchblende rejuvenation, Europe, 385
pyrite, stoping, Yauricocha, Peru (discussion), 1070
rutile, Idaho, 1183
shale deposits, 703, 707
sulfides, equatorial Africa, 1708, 1712
Garon Lake, Que., 338, 352
Johnson Camp, Arizona, 388
sulfur isotope variations, 514, 528
syngenetic mineral deposits, *729*
tin, 506
Bolivia, Uncia-Llallagua deposits, 1501
U.S.S.R., Chatkalsk-Kuraminsk Mtns. (review), 849
uranium Blind River district, Ontario, 1752
Colorado Plateau, 724, 726, *727*
Yellowknife district, N. W. T., 1595
Mineralization of the Coeur d'Alene district, Idaho, Isotopic composition of lead and Precambrian (Long, Silverman, and Kulp), 645; discussion, 1565
Mineralization of uranium-bearing "siliceous reef" veins in the Boulder batholith, Montana, Primary (Wright and Bieler), 56, 363
Mineralogical phase rule, 1461
Mineralogy, bauxite, Portilla de Luna deposit, Spain, 1285
blacksand placers, Idaho, 789, 791
Burgin mine area, Utah, 1534
carbonatites, Lueshe deposit, Congo, 732, 734
Cassiar serpentinite body, Brit. Columbia, 331
clay minerals in iron ores, Lake Superior, 150, 153
davidite, 1030
garnet coronites and porphyroblasts, N. Y., *263*, *266*
gold-quartz lenses, Yellowknife N.W.T., 1596
gold-uranium deposits (review), 1074
heavy minerals, conglomerates, Blind River, Ont., (discussion), 411
U.S.S.R. (review), 1071
Journal of Petrology (review), 1765
Lovozero alkali massif, U.S.S.R. (review), 853
manganese deposits, Nsuta, Ghana, *278*, *290*
manganese oxides, *2*, *7*
U. S., 46, 51
minerals, New Mexico (review), 1073
ore zones, Central City district (abstract), 1328
ores, anisotropic minerals, rotation properties (abstract), 1335
Bolivia, 218, 574, 577, 587
copper, Braden district, Chile, 888, 893, 897
Creede, Colo. (abstract), 1336
East Tintic district, Utah, 1134
gold, Kolar area, India, 1430, 1447
H. Steele mine, New Brunwick, 539, 545
Johnson Camp, Ariz., 388
Morococha district, Peru, 966, 981
Saskatchewan, Hanson Lake, 1644
sulfides, Garon Lake, Que., 338, 350
equatorial Africa, 1712, 1714
sulfur control of mineral assemblages (abstract), 1336
Sun Valley mine, Ariz., 141, 142
tin-tungsten, Lost River mine, Alaska, 1482
U.S.S.R., Geology of Ore Deposits (communication), 401
uranium, Blind River, Ont., *660*, *672*, *679*, *688*, *692*, 906, 919
Pronto deposit, Ont. (abstract), 1332
San Juan Basin, New Mexico, 445
Vatukoula gold field, Fiji, 1466
Witwatersrand (review), 1318
zinc, Jefferson City mine, Tenn., 989
South West Africa, Berg Aukas mine (discussion), 845
ores and rocks, Lordsburg, district, New Mexico, 1263

Mineralogy—*Continued*
paragenesis, physiochemical analysis (review), 1566
placer deposits, Elk City, region, Idaho (abstract), 1325
reflectivity of opaque minerals (communication), 1309
rocks, thin section study (review), 207
rutile deposits, Idaho, 1179, 1184
sulfides, Bathurst-Newcastle area, New Brunswick, 1680
oxidation series and reaction potentials (abstract), 1331
taconite, Minn., 563, 568
tactites, 1411
telluride minerals, 1148, 1159, 1161, 1163, 1178, 1466
textbooks (reviews), 416, 851, 853
reprint of V. I. Vernadskii's book (review), 1315
thucholite deposits, 1722
Temiscamie iron formation, Quebec, 311
U.S.S.R., Memoirs of East Siberian Division of All-Union Miner. Soc. (review), 1316
symposium (review), 1762
uranium, non-Russian uranium minerals (review), 1316
uranium veins, Boulder batholith, Mont., 59, 67, 363, 366
willemite-hemimorphite relationship (discussion), 844
Minerals, Inclusions in cassiterite and associated (Little), 485
Intriguing examples of geology applied to industrial (Gillson), 629
alteration minerals, ore districts, Bolivia, 252
Kalgoorlie gold field, Western Australia, 1163
metamorphic mineral assemblages, 1460
New Mexico (review), 1073
paragenesis, physiochemical analysis (review), 1566
reflectivity of opaque minerals (communication), 1309
rock minerals, oxidation potential control, 950
Minerals associated with the Lake Superior iron ores, Clay (Bailey and Tyler), 150
Minerals at 25° C., Oxidation mechanisms of sulfide (Sato), 1202
Minerals for quantitative microscopic analysis, Method of mounting minute particulate samples of opaque ore (Dillinger and Sclar), 187
Minerals of the Nsuta manganese deposits, Ghana, West Africa, Manganese oxides and associated (Sorem and Cameron), 278
Mining, Arizona, history of mining (review), 418
Braden copper mine, Chile, 882
Mining—*Continued*
British Isles, future prospects (review), 854
East Tintic district, Utah, 1508, 1523
kaolinitic sediments, Florida, 1383
Kolar gold field, history, India, 1431, 1443
uranium, Boulder batholith, Mont., 60
Minium, 1103, 1114
Minnesota, Stratigraphy of the eastern Mesabi district (Gundersen), 1004
gravity anomalies, Vermilion iron range, 469, 479
iron formation, chemical analyses, 319
iron ores, genesis, 166
peat, humic acid analysis, 1042
taconite, lithology, 563
Minnesotaite, 316
Miser, H. D., on manganese, Ark., 1757
Miser, H. D., and Hewett, D. F., on hausmannite, 22
Miser, H. D., and Purdue, A. H., on Bellah mine, Ark., 1552
Mississippi Valley, lead-zinc, Upper Miss. Valley district, 1087
Mississippi Valley type in equatorial Africa, Some ore occurrences of the (Stam), 1708
Mississippi Valley type lead deposits, origin (abstract), 1331
Mississippi Valley type ore deposits, Pennines, England (discussion), 205
Missouri, Decaturville disturbance (abstract), 1340
galena, sulfur isotopic ratios, 80, 84, 86, 91, 93
manganese oxide, Ellington deposit, 16
sulfides, mill feed samples, 118
sulfur isotopes, southeast Mo., 1687
Mitcham, T. W., on alteration, 647
Mitchell, B. J., on niobium determination, 744
Mitchell, R. L., on Cr, Nb, and Ta lines, 1549
Mitsuda, T., on chlorite, 164
Moench, R. H., with Hilpert, L. S., *Uranium deposits of the southern part of the San Juan basin, New Mexico*, 429
Molloy, J. S., with Howell, F. H., *Geology of the Braden orebody, Chile, South America*, 863
Molybdenian scheelite, 1411, 1420, 1427
Molybdenite, 78, 888, 901, 1105, 1107, 1414
rhenium content (communication), 607
Molybdenum, trace element in supergene minerals of Mo, 1112
Molybdenum in soil and rock, New geochemical method for the determination of (Perry), 1232
Monadnocks, Rhodesian copper ores and monadnocks, 710
Monazite, 575, 674, 680, 690, 921, 1545, 1561
Georgia, pegmatite deposits (discussion), 610

Monazite and columbium-bearing rutile deposits in northern Lemhi County, Idaho, Genetic aspects of the (Anderson), 1179
Montana, Primary mineralization of uranium-bearing "siliceous reef" veins in the Boulder batholith (Wright and Bieler), 56, 363
Butte district, sulfur isotopes, 1687
manganese oxides, 18
mining districts having intrusive aphanites, 1626
sulfides, mill feed sample, 117
Montbrayite, 1149, 1161
Montgomery, D. S., on oil, 803
Montmorillonite, 70, 155, 162, 171, 1396
Moon, L. B., on Paleozoic Llallagua, Bolivia, 224
Moore, E. S., on nickel-copper deposit, Blind River, Ont., 672
Moore, G. W., on uranium, 1717
Moore, J. W., and Dunning, H. N., on mesoporphyrin IX dimethyl ester, 799
Moorhouse, W. W., review of book by, 207
Morey, G. W., on P-T curves, 1369
Morey, G. W., and Chen, W. T., on hydrothermal systems, 1479
Morey, G. W., and Ingerson, E., on argillic minerals, 1479
Morey, G. W., and Williamson, E. D., on the invariant point, 1369
Morimoto, N., on arsenopyrite, 1637
Morococha district, Peru, Ore controls in the (Nagell), 962
Morris, H. T., with Lovering, T. S., *The Chief Oxide-Burgin area discoveries, East Tintic district, Utah; A case history. Part I. U.S. Geological Survey studies and exploration*, 1116
on heavy metals, 1125
on ore metals, 1511
Morse, H. W., and Locke, A., on oxidation products, 1204
Morse, P. F., and Hand, W. F., on shale, 1656
Mounting minute particulate samples of opaque ore minerals for quantitative microscopic analysis, Method of (Dillinger and Sclar), 187
Mountjoy, W., partial chemical analyses by, 446
Mozambique, davidite, 1542, 1544
chemical analyses, 1033
Mud cracks, Hawthorne clay, Florida, 1391
Muench, O. B., on lead age, 1731
Muller, L. D., on the micropanner, 187
Murata, K. J., *et al.*, on bastnaesite, 1545
Murdoch, J., and Webb, R. W., on crednerite, 13
Murphy, J. T., and Houston, R. S., on zircon, 142
Murray, W. J., and Carter, S. R., discussion of a discussion by, 615
Murthy, M. V. N., on corona garnet, 268
Muscovite, 71, 154, 164, 287, 1396
Mylonite, 614

Nackowski, M. P., Eardley, A. J., and Wilson, J. E., on geology, 1050
Nacrite, 153, 156, 158
Nagell, R. H., *Ore controls in the Morococha district, Peru*, 962–984
on anhydrite, 967
Nagelschmidt, G., on nacrite, 156
Nagyagite, 1173
Nakabayashi, K., and Fuijiwara, T., on sulfides, 1206
Narayanaswami, S., Ziauddin, M., and Ramachandra, A. V., *Structural control and localization of gold-bearing lodes, Kolar gold field, India*, 1429–1459
Native arsenic, 1177
Native copper, 405, 406, 888, 1325
Native gold and arsenopyrite, 1346, 1646
Native sulfur, sulfur isotope variations, 1685
Native tellurium, 1171, 1468, 1469
Natural gas, California, coastal seas (review), 1317
geochemical prospecting, U.S.S.R. (review), 1315
Neale, E. R. W., on Mistassini district, Quebec, 312
Neilson, J. M., on Mistassini district, Quebec, 312
Neilson, J. M., Snelgrove, A. K., and Van Pelt, J. R., *Curricular and professional aspects of geological engineering*, 1048–1059
Nelidow, I., and Diamond, R. M., on MoO_3·2HCl, 1237
Nelson, B. W., and Roy, R., on aluminous serpentine, 157
Neuhaus, A., on pyrite, 1354
Neuman, W. F., *et al.*, on UO_2, 355
Neumann, H., on solutions, 603
Neumann, H., Heier, K., and Hartley, J., on loellingite, 1354
Nevada, Goodsprings district, ore deposits, 1086, 1096
magnesite, Gabbs deposit, origin (abstract), 1338
manganese oxides, 18, 25, 30, 35, 44
mining districts having intrusive aphanites, 1626
silver, Bristol mine, ore deposition (abstract), 1337, 1341
sulfides, mill feed samples, 117
New Brunswick, Canada, Geology, sulfur isotopes and the origin of the Heath Steele ore deposits, Newcastle (Dechow), 539
Sulfur isotopes and the origin of the sulfide deposits of the Bathurst-Newcastle area of northern (Tupper), 1676
lead, anomalous leads (discussion), 841

New Brunswick sulfide deposits, Application of the sphalerite geothermometer to some northern (Benson), 818
Newcastle area of northern New Brunswick, Sulfur isotopes and the origin of the sulfide deposits of the Bathurst (Tupper), 1676
Newfoundland, Buchans sulfide deposit, sulfur isotopes, 1687
chrysotile, Baie Verte deposits (communication), 399
Gull Pond sulfide area, metamorphism, 351
sulfides, mill feed sample, 117
Newhouse, W. H., on granites, 557
on ores, 123
New Jersey, franklinite, 12, 22
ilmenite, alteration (discussion), 1759
sulfides, sulfur isotopic ratios, Franklin-Sterling district, 78, 81, 84, 88
sulfur isotopes, Sterling Hill, 1687
New Mexico, Intrusion and ore deposition in (Belt), 1244
Uranium deposits of the southern part of the San Juan basin (Hilpert and Moench), 429
chalcopyrite blebs in sphalerite, Magdalena, 395
manganese oxides, 19, 26, 44, 49
minerals (review), 1073
mining districts, 1626
molybdenum, Questa area, soil samples, 1233
Morrison formation, alteration (discussion), 1758
Paleozoic, pre-Simpson stratigraphy (review), 1074
sulfides, sulfur isotopic ratios, 78, 83, 84, 87
sulfur isotopes, Santa Rita sulfide deposit, 1687
uranium, Woodrow mine, sulfur isotope ratios (abstract), 1329
New South Wales, cassiterite, inclusions, 492
davidites, 1544
Newton, C. J., and Vacher, H. C., on photomultiplier tubes, 1306
New York, Genesis of the Gore Mountain garnet deposit (Bartholomé), 255
Position of the salt-water body in the Magothy (?) formation in the Cedarhurst-Woodmere area of southwestern Nassau County, Long Island (Lusczynski and Swarzenski), 1739
sulfides, sulfur isotopic ratios, Ellenville mine, 78, 84, 89, 1687
titaniferous magnetite, origin, 641
New Zealand, coal (review), 415
sulfur isotopes in thermal waters, 1688
Nickel, manganese oxide content, 17
Manitoba, Thompson-Noak Lake belt (abstract), 1327
Nickel—*Continued*
Ontario, Blind River area, 673
porphyrin-nickel complex, 799
Nickel, cobalt, copper, zinc, lead, and sulfur contents of some North American base-metal sulfide ores (Kilburn), 115
Nier, A. O., on lead, 1732
on pitchblende, 384
Nier, A. O., Ney, E. P., and Ingram, M. G., on a null method, 512
Nier, A. O., Thompson, R. W., and Murphey, B. F., on lead age, 1731
Nigeria, cassiterite, inclusions, 491
Niggli, P., on ore deposits, 1245
Niggli, P., Koenigsberger, J. G., and Parker, R. L., on nacrite, 156
Nikogosyan, K. S., on nacrite, 156
Niobium-bearing carbonatites by x-ray methods, Geochemical prospecting and appraisal of (Van Wambeke), 732
Nishihara, G. S., on sulfides, 1205
Nissen, A. E., and Hoyt, S. L., on argentite, 759
Noble, L. F., Mansfield, G. W., and Calkins, F. C., on manganese oxide, 36
Noddack, W., and Wrabetz, K., on sulfides, 1206
Noddack, W., Wrabetz, K., and Herbst, W., on sulfides, 1206
Nogami, H. H., and Hurley, P. M., on absorption coefficients, 376
Nolan, T. B., on fractures, 245
Noll, W., on argillic alteration minerals, 1479
on kaolinite, 154
on sericite, 596
Nonmetallic minerals (review), 853
Norin, E., on muscovite, 155
Norrish, K., thoria determination by, 1033
North America, gems (review), 1073
North Carolina, galaxite, 12, 22
lithium pegmatites, Kings Mtn., 639
North Dakota, manganese oxide deposits near springs, 41
North West Territories, gold, Yellowknife deposit, sulfur isotopes, 1592
sphalerite, Giant Yellowknife mine, 1643
Northern Rhodesia, copper, 707
origin, 805
willemite, Broken Hill deposit (discussion), 844
Northrop, S. A., review of book by, 1073
Norton, F. H., on hydrothermal systems, 1479
Norway, davidite, Tuftan, 1544
Notman, A., on Bisbee area, Ariz., 935
Nováček, R., on nacrite, 156
Nsuta manganese deposits, Ghana, West Africa, Manganese oxides and associated minerals of the (Sorem and Cameron), 278
Nsuta MnO_2, 303, 304

Nuffield, F. W., on pitchblende, 673
on uranium, 1755
Nyasaland, davidite, Tambani, 1544
Nye, W. F., on rho-MnO_2, 280

Obruchev, V. A., review of book by, 852
Oceans, California, coastal seas (review), 1317
Ochre opal, 63
Oder, C. R. L., on Rocky Valley fault, Tenn., 1001
Oder, C. R. L., and Hook, J. W., on "foundering," 993
on zinc-lead, southern Appalachian district, 1088
Oder, C. R. L., and Miller, H. W., on stratigraphy, Jefferson City district, Tenn., 987
Odum, H. T., on strontium, 177
Oedman, O., on Boliden sulfide district, Sweden, 514
Oelsner, O., on pyrite, 1351
Offman, P. E., and Chumakov, N. M., review of book by, 1570
Oftedahl, C., on sulfides, 1683
Oftedahl, I., on galena, 760
Ohio, Occurrence of strontium in the surface and ground waters of Champaign County (Feulner and Hubble), 176
Ohle, E. L., discussion of paper by, 205
on Mississippi Valley type ore deposits, 1708
on ore solutions, 987
Oklahoma, manganese oxide, Johnson Co., 16
Olson, J. C., *et al.*, on carbonatites, 734
Ontario, argentite, oxidation electrode potential, 1220
galena, Mayflower mine, 779
pyrrhotite, oxidation electrode potential, 1225
sulfides, mill feed sample, 117
sulfur isotopic ratios, 78
sulfur isotopes, Sudbury, 1687
taconite, density determinations, 468, 469
thucholite, Besner mine, 1716, 1722
uranium, Blind River area, 718
conglomerates (discussions), 410, 1561
drill hole deviation (abstract), 1341
Blind River deposits (review), 1074
origin, 659, 906
Pronto deposit (abstract), 1332
Opal, 63, 364, 365
Lake Ixpaco, Guatemala, 532
Orange Free State, gold field, 716
Ordovician, H. Steele mine area, New Brunswick, 539
Potosi ore district, Bolivia, 220
Ore as applied to future mineral exploration, Critical remarks on the genesis of (Sales), 805
Ore bodies, Oxidation of sulfide (Sato), 928
Ore bodies—Continued
Bristol silver mine, Nevada (abstract), 1337
Burgin mine, Utah, 1535
columbium-bearing rutile, Idaho, 1183
copper, Braden district, Chile, 882
copper-zinc, Johnson Camp, Ariz., 388
East Tintic district, Utah, 1119, 1123
H. Steele mine area, New Brunswick, 544
manganese, Nsuta deposit, Ghana, 282
Morococha district, Peru, 968, 977
scheelite, Colo., 1412
uranium, Blind River district, Ont., 916
East Vermilion Cliffs area, Ariz., 141
Jackpile mine, New Mexico, 450
zinc, Jefferson City mine, Tenn., 985
Orebody, Chile, South America, Geology of the Braden (Howell and Molloy), 863
Ore controls in the Morococha district, Peru (Nagell), 962
Ore deposition, ore deposits from crystallates, 1272
Ore deposition in New Mexico, Intrusion and (Belt), 1244
Ore deposits, 848
Rejuvenation of pitchblende in Hercynian (Davidson), 383
Residual characteristics of crystallates genetically associated with (Rattigan), 1272
Sulfur isotopes and (Ault and Kulp), 73
bauxite, origin from clay minerals, Europe (abstract), 1338
beryllium deposits (review), 1570
Braden copper deposit, Chile, comparisons with other deposits, 901
breccia and pebble columns with hydrothermal deposits (abstract), 1334
cobalt (review), 1570
Coeur d'Alene district, Idaho, 648
East Tintic district, Utah, 1134
Economic Geology Anniversary Volume, translation (review), 850
genesis and exploration, 805
gold, sulfide deposits, oxidation, U.S.S.R. (review), 1761
gold-telluride deposits, 1161, 1473
gold-uranium conglomerates (review), 1074
H. Steele mine area, New Brunswick, 544
lead, isotopes, origin and dating of deposits (abstract), 1331
New Brunswick, anomalous leads (discussion), 841
lead-zinc, supergene alteration, 1084
magmatic and hydrothermal deposits, sulfur isotope ratios (abstract), 1330
magmatic and non-magmatic ores (abstract), 1328
manganese oxides, U.S., 1, 2, 4, 13, 23, 45
Mattagami area, Quebec (abstract), 1326

Ore deposits—*Continued*
Mississippi Valley type, west equatorial Africa, 1708, 1710, 1713
Morococha district, Peru, 962
nickel, Manitoba, Thompson-Noak Lake belt (abstract), 1327
niobium and tantalum, 733, 738
origin, vi, 196
Miss. Valley type in Pennines, England (discussion), 205
placer classification, 793
porphyries, productive and barren intrusives, western U.S., 1622
pyrite, massive eugeosynclinal deposits (abstract), 1327
rutile, Idaho, Lemhi Co., 1179
source bed concept (discussion), 615
sulfides, Bathurst-Newcastle area, New Brunswick, 1680
origin, 1686, 1705
sulfur isotopes and hydrothermal deposits (discussion), 206
Sweden, Boliden and Falun sulfide deposits, isotope abundances, 514
syngenetic deposits, 728
tin, 486, 498, 504
tin-tungsten, Lost River mine, Alaska, 1481
tungsten, scheelite, Colorado, 1406, 1408, 1423, 1425
U.S.S.R., Chatkalsk-Kuraminsk Mtns. (review), 849
Geology of Ore Deposits (communication), 401
symposium (review), 1762
uranium, deposits of non-Russian countries (review), 1316
San Juan basin, Colo. Plateau, 430, 445, 449
sandstone deposits, determination of migration (abstract), 1342
Utah, Tintic mining district (review), 1762
Ore deposits and sedimentary features Jefferson City mine, Tennessee (Kendall), 985
Ore deposits of central Bolivia, Comparative study of major (Turneaure), 217, 574
Ore minerals for quantitative microscopic analysis, Method of mounting minute particulate samples of opaque (Dillinger and Sclar), 187
Ore occurrences of the Mississippi Valley type in equatorial Africa, Some (Stam), 1708
Ore shoots, Bolivia, 583, 599
East Morococha district, Peru, 974
gold, Kolar gold field, India, 1430, 1450, 1454
Witwatersrand, reef deposits, 715
sulfides, Garon Lake, Que., 338, 349
zinc, Jefferson City mine, Tenn., 993
Oregon mining districts having aphanitic intrusives, 1627
Orel, J., and Pavlovitch, St., on manganese oxides, 2
Ores, Clay minerals associated with the Lake Superior iron (Bailey and Tyler), 150
Nickel, cobalt, copper, zinc, lead, and sulfur contents of some North American base-metal sulfide (Kilburn), 115
arsenopyrite, etc., Yellowknife, N.W.T., 1643
Bolivia, 574
oxidized ores, 582
Burgin mine, Utah, 1534
Colorado, Central City district, zoning (abstract), 1328
copper, Braden mine, Chile, 883, 888
Morocrocha district, Peru, 966
garnet, Adirondacks, N. Y., 258
gold, sulfur isotope ratios, Yellowknife district, N.W.T., 1601, 1602, 1617
gold-uranium, Witwatersrand (review), 1318
H. Steele mine area, New Brunswick, 539, 545
igneous rock groups and ore groups, 1275
iron-manganese, Nb and Sr content, 741
magmatic and non-magmatic ores (abstract), 1328
magnetite, Cornwall deposit, Pa. (abstract), 1334
manganese, Koduru area, India, 830
manganese oxides, Nsuta, Ghana, 282
mineralogy, Creede, Colo. (abstract), 1336
Kalgoorlie gold field, Western Australia, 1163
minerals, reflectivity measurements (communication), 1306
reflectivity values for opaque minerals (communications), 1309
rhenium content, U.S.S.R. (communication), 607
silver, Nevada, Bristol mine (abstract), 1337
sulfides, Bathurst-Newcastle area, New Brunswick, 1705
oxidation and enrichment, Eh-pH diagrams (abstract), 131
taconite, gravity prospecting, 465, 466
U.S.S.R., Geology of Ore Deposits (communication), 401
Utah, Silver Reef, genesis (communication), 835
zinc, Jefferson City mine, Tenn., 985, 989
Ores and their origin, Blind River uranium (Robertson and Steenland), 659
Comments regarding the Blind River (Algoma) uranium (Joubin), 1751
Ores in layered rocks, Patterns to (Bain), 695

Origin, Blind River uranium ores and their (Robertson and Steenland), 659
Comments regarding the Blind River (Algoma) uranium ores and their (Joubin), 1751
barite in limestone, 632
bauxites from clay minerals, Europe (abstract), 1338
Braden pipe, Chile, 880
chalcopyrite blebs in sphalerite, Arizona, 387, 395
clay minerals, Lake Superior iron ores, 153
Lost River tin mine, Alaska, 1478, 1497
copper, Congo-Rhodesian mineral belt, 712
feldspar compositional variations, Ariz., 577, 561
garnet ore, N. Y., 257, 263, 276
gold lodes, Kolar field, India, 1457
gold-uranium, Witwatersrand (review), 1318
H. Steele ore deposit, New Brunswick, 539, 552
ilmenite rock deposits, 641
iron ores, Lake Superior, 150, 165
lead deposits (abstracts), 1331
New Brunswick, anomalous leads (discussion), 841
ores, Idaho and Brit. Columbia, 653
magnesite, crystalline deposits (abstract), 1338
magnetite, Cornwall deposit, Pa. (abstract), 1334
manganese oxide deposits, 51
Ariz.-Nev., 33
Nsuta, Ghana, 279
manganese oxide minerals, 2, 47
oil, athabasca sands, Alberta, 803
ore deposits, vi, 196
Bolivia, central Bolivia, 590, 602
Miss. Valley type in Pennines, England (discussion), 205
pyrite, Kalgoorlie gold field, Western Australia, 1177
massive eugeosynclinal deposits (abstract), 1327
rutile deposits, Lemhi Co., Idaho, 1180, 1198
scheelite deposits, Colo.-Wyo., 1423, 1425
silver ores, Silver Reef, Utah (communication), 835
sulfides, Garon Lake, Que., 352
sulfur isotope fractionation (discussion), 206
syngenetic ore deposits, 729
thorium, uranium, and zirconium in bauxite, 1653
uraniferous conglomerates (discussion), 410
uraninite conglomerate deposits, Witwatersrand (discussion), 843
Origin—Continued
uranium, asphaltite-rich bodies, Temple Mtn. Utah (abstract), 1339
Blind River district, Ontario, 720, 919, 923
Colorado Plateau, 725, 727
San Juan basin, New Mexico, 450
sulfur isotope ratios (abstract), 1329
uranium-vanadium, Utah, Lisbon Valley deposits, origin (abstract), 1339
White Pine copper deposit, Mich. (discussion), 402, 408
willemite deposits (discussion), 844
zinc, Jefferson City district, Tenn., 985, 1000
Origin of central Idaho blacksands, Nature and (Savage), 789
Origin of the Blind River uranium deposits, Evidence of the (Derry), 906
Origin of the Heath Steele ore deposits, Newcastle, N. B., Canada, Geology, sulfur isotopes and the (Dechow), 539
Origin of the kaolin, Kaolinitic sediments in peninsular Florida and (Pirkle), 1382
Origin of the sulfide deposits of the Bathurst-Newcastle area of northern New Brunswick, Sulfur isotopes and the (Tupper), 1676
Origin of thucholite (Hoekstra and Fuchs), 1716
Orpiment, 1348
Orthoclase, 64, 68, 1009
Arizona, Globe-Miami district, compositional variations, 557
Orville, P. M., on feldspars, 558
Osborne, F. F., on cobaltite, 674
on cordierite, 351
Oslund, K., analyses by, 269
Osmiridium, Witwatersrand, conglomerate deposits, 713
Osterwald, F. W., and Osterwald, D. B., on scheelite, 1423
Otavite, 1107, 1108
Overholt, —., *et al.*, on arizonite, 1069
Owen, E. A., and Roberts, E. A. O., on gold, 1356
Oxidation, auriferous sulfide deposits, U.S.S.R. (review), 1761
Braden copper district, Chile, 897
Burgin mine area, Utah, 1534
galena, 1107
hydrocarbon deposits, 1719
ore deposits, Bolivia, 582
sulfide deposits, Bathurst-Newcastle area, New Brunswick, 1680
sulfides, Eh-pH diagrams (abstract), 1331
sulfur isotopes, fractionation, 514, 521, 528
ratios in oxidation, 547
supergene, Lost Rive tin mine, Alaska, 1497

Oxidation—*Continued*
uranium, Besner mine, Ont., 1716, 1727
sandstone deposits, Wyoming (abstract), 1332
willemite-hemimorphite relationship (discussion), 844
Oxidation mechanisms of sulfide minerals at 25° C. (Sato), 1202
Oxidation of sulfide ore bodies (Sato), 928
Oxidation potential (Eh), 928, 937
Oxides, Deposits of the manganese (Hewett and Fleischer), 1
manganese oxide minerals, 2, 7
ores above carbonatites, Congo, 741
Oxides and associated minerals of the Nsuta manganese deposits, Ghana, West Africa, Manganese (Sorem and Cameron), 278
Oxygen, oxidation potential control, 947
Ozerov, I. M., review of book by, 1071

Page, L. R., on pegmatites, 733
Page, L. R., *et al.*, on pegmatites, 638
Palache, C., on manganite, 9
Palache, C., Berman, H., and Frondel, C., on apatite, 355
on arsenopyrite, 1353
on multiple oxides, 1037
on pyrite, 1144
on sulfosalts, 760
on sylvanite, 1157
Paleochannels, Blind River uranium district, Ontario, 718, 913
Colorado Plateau uranium deposits, 720, 722
East Vermilion Cliffs area, Ariz., 140
Poison Canyon uranium deposit, New Mexico, 455
Paleogeography, subsurface mapping (review), 1317
U.S.S.R., textbook (review), 1762
Paleozoic, Bolivia, ore districts, 220, 224
Germany, microtectonic methods (review), 1316
Texas and New Mexico (review), 1074
Paleozoic of Leon, Spain, Bauxite deposit in the (Font-Altaba and Closas M.), 1285
Panizo, 582
Paragenesis, arsenopyrite, etc., 1643
columbite-monazite deposits, Idaho, 1193
ores, Bolivia, 574, 577, 594
copper, Braden, Chile, 893
crystallization differentiation, 1281
lead-zinc, 1087, 1089, 1095, 1114
manganese oxides, 6, 47
Nsuta, Ghana, 298
scheelite, Colo., 1415
sulfides, Garon Lake, Que., 350
sulfur isotope formation, 1608
physiochemical analysis (review), 1566
rutile deposits, Idaho, 1180

Paragenesis—*Continued*
veins, minerals, Boulder batholith, Mont., 63, 371
Pardee, J. T., and Schrader, F. C., on Boulder batholith, Mont., 59
Park, C. F., Jr., on jacobsite, 12
Park, C. F., Jr., and Cox, M. W., on manganese oxide, 37
Parsons, A. B., on Tintic Standard mine, Utah, 1512
Parwel, A., with Gavelin, S., and Ryhage, R., *Sulfur isotope fractionation in sulfide mineralization*, 510
Patterns to ores in layered rocks (Bain), 695
Patterson, C. C., on lead isotopes, 652
Pauling, —., and Huggins, —., on *a* $AgBiS_2$, 773
Peach, P. A., on decrepitation, 489
Peacock, M. A., and Smith, F. G., on pyrite, 1355
Peacock, M. A., and Thompson, R. M., on montbrayite, 1149
Pearls, gems and pearls (review), 208
Pearsall, W. H., and Mortimer, C. H., on Eh of soils, 930, 940
Peat, metamorphism, 1718
Pebbles, hydrothermal deposits and breccias (abstract), 1334
vug-filling pebbles, 994, 995
Pecora, W. T., on carbonatites, 734, 1200
Pecora, W. T., and Kerr, J. H., on calkinsite, 1545
Pecora, W. T., *et al.*, on pegmatites, 638
Pegmatites, 638
beryllium deposits, U.S.S.R. (review), 1570
Boulder batholith, Mont., 64
cassiterite, inclusions, 485, 490, 500
Colorado, Tarryall Springs district, 1414, 1419
columbite-tantalite deposits, 733
Georgia, monazite pegmatites (discussion), 610
Idaho batholith, blacksand derivative deposits, 795
Missouri, Decaturville disturbance (abstract), 1340
U.S.S.R., Lovozero alkali massif (review), 853
uraninite, 690
Yellowknife district, N.W.T., 1594, 1596
Pélabon, H., on Au-Te system, 1149
Pellini, G., and Quercigh, E., on tellurides, 1149
Pennsylvania, Baltimore gneiss, age, 324
magnetite, Cornwall deposit (abstract), 1334
sulfur isotopic ratios, Fridensville, 83, 89
Periodicals, index of geological periodicals (review), 849

Perlmutter, N. M., Geraghty, J. J., and Upson, J. E., on salt water, Long Island, N. Y., 1740
Permeability, Salt Wash deposits, Colorado Plateau, 725
Permyakov, V. M., on nacrite, 154
Perrin, P., on petrologic calculation, 1491
Perry, J. K., *A new geochemical method for the determination of molybdenum in soil and rock*, 1232–1243
Peru, Ore controls in the Morococha district (Nagell), 962
Cerro de Pasco, sulfur isotopes, 1687
Yauricocha district, sulfide orebodies (discussion), 1070
Petalite, 639
Peters, W. C., on fluorite, 635
Petersen, R. G., *Detrital-appearing uraninite grains in the Shinarump member of the Chinle formation in northern Arizona*, 138–149
Peterson, N. P., Gilbert, C. M., and Quick, G. L., on intrusives, 558
on quartz, 597
Petroleum, California, coastal seas (review), 1317
geochemical prospecting, U.S.S.R. (review, 1315
geology, textbook (review), 417
metamorphism, 1718, 1719
porphyrins and trace metals, 800
Petrology, argillized rocks, Lost River tin mine, Alaska, 1486
Boulder batholith, Mont., 64
carbonatites, 734, 1200
chalcopyrite blebs in sphalerite study, 391
diamond deposits, Yakutia, U.S.S.R. (review), 1569
emeralds, U.S.S.R., Izumrud deposit (review), 1571
garnet ore, N. Y., 259
granite and sediments, Mesabi Range, Minn., 1009, 1010
granite intrusives and tin, 1277
igneous rocks, Braden region, Chile, 873, 875
New Mexico, 1246, 1249, 1259, 1263
jasperoids, East Tintic district, Utah, 1516
Journal (review), 1765
mineral equilibria (review), 622
sedimentary rocks, pre-Simpson deposits, Texas (review), 1075
thin section study of rocks (review), 207
U.S.S.R., Chatkalsk-Kuraminsk Mtns. (review), 849
Lovozero alkali massif (review), 852
symposium (review), 1762
Petrography of Pottsville sandstones and the occurrence of high-aluminum Mercer clay, Relationship between the stratigraphy and (Williams), 1291
Pettijohn, F. J., on end-member concept, 569
Petzite, 1152, 1157, 1165, 1167, 1468, 1470
Phases in the system Au-Ag-Te, Synthetic and natural (Markham), 1148, 1460
Phlogopite, 1187, 1194
Phosphates, Phosphoria formation, Idaho, minor element content (abstract), 1333
Phosphorite from calcite, Some cation substitutions during the formation of (Ames), 354
Photomicrographs, breccia, Mont., 370
chalcopyrite blebs in sphalerite, 393, 394
Citronelle sediments, Florida, 1392
garnet porphyroblasts, N. Y., 260
greisen, Lost River tin mine, Alaska, 1484
inclusions in tin ore minerals, 494
manganese oxides, Nsuta, Ghana, 283
matildite and galena intergrowths, 760
ores, Coeur d'Alene district, Idaho, 656
gold, Vatukoula, Fiji, 1468
H. Steele sulfide mine, New Brunswick, 546
Kalgoorlie gold field, Western Australia, 1165
ores and rocks, rutile deposits, Idaho, 1186
pyrite and arsenopyrite on parent materials, 1374
serpentinite, Brit. Columbia, 331
Shinarump conglomerate, Arizona, 143
tourmaline, Pa., 1299
Physics and geology review), 621
Physics of the earth (review), 1571
Physiography, Kolar gold field, India, 1434
Pickeringite, 531, 532, 536
Picrolite, 399, 631
Pierce, E. L., on St. Johns River, Fla., 1402
Pierce, W. G., on lithiophorite, 10
Pilz, R., on diorite porphyry, Bolivia, 223
Piontelli, R., on sulfides, 1206
Pipes, Braden copper orebody, Chile, 864, 874, 878, 900
breccia, Oruro district, Bolivia, 230
San Juan basin, New Mexico, 441, 448, 452, 456
breccia and pebble columns with hydrothermal deposits (abstract), 1334
Bristol silver mine, Nevada (abstract), 1337
diamond deposits, Yakutia, U.S.S.R. (review), 1569
ore bodies, Morococha district, Peru, 968, 978, 979
porphyry copper districts, 902
sphalerite, Johnson Camp, Ariz., 387, 388
U.S.S.R., Siberia (review), 1570
Pires Lobato, C., on pitchblende, 385
Pirkle, E. C., *Kaolinitic sediments in peninsular Florida and origin of the kaolin*, 1382–1405

Pitchblende, 673, 690, 1305, 1752, 1755
Pitchblende in Hercynian ore deposits, Rejuvenation of (Davidson), 383
Placers, concentrates from carbonatites, 738
Idaho, blacksands, central Idaho, 789, 791
U.S.S.R., prospecting (review), 1071
tin, Kazakstan (review), 852
Plagioclase, 64, 67, 1009
chemical analysis, 269
Plans, Bonne Terre mine, Mo., 81
Burgin mine, East Tintic district, Utah, 1525
Cassiar asbestos property, Brit. Columbia, 330
Cedarhurst-Woodmere area, N. Y., 1741
F-33 deposit, Ambrosia Lake, New Mexico, 460
Lost River tin mine, Alaska, 1486
magnetometer survey and drill holes, Garon Lake, Que., 344, 345
Mayflower channel, Calif., 699
Negus mine, Yellowknife, N.W.T., 1595
orebodies and blebs in sphalerite, Moore mine, Ariz., 390
stopes, Jefferson City zinc mine, Tenn., 991
vein systems, Bolivia, 237, 241
Plante, E. C., and Sutherland, K. C., on sulfides, 1204
Plants, mineralized plants, San Juan basin, New Mexico, 447
Silver Reef, Utah (communication), 836
Plattnerite, 1087, 1102, 1104, 1114
Pleistocene, Cedarhurst-Woodmere area, N. Y., 1743
Plumbojarosite, 1535
Pneumatolytic tin deposits, 500
Poldervaart, A., on rocks, 1491
Pommer, A. M., on vanadium ores, 930
Porphyrin, 797
Porphyry, Differences between barren and productive intrusive (Stringham), 1622
Porphyry mineral deposits, 809
Portugal, cassiterite, inclusions, 491
pitchblende, Hercynian deposits, 383, 385
Portuguese West Africa. See Angola!
Potassium, bauxite content, 1671
Potosi tin-silver district, Bolivia, 220, 240, 242, 253, 580, 587
Pottsville sandstones and the occurrence of high-aluminum Mercer clay, Relationship between the stratigraphy and petrography of (Williams), 1291
Pough, F. H., on willemite, 844
Pountney, R. T., on Algom mining area, Ont., 908
Povarennykh, A. S., on topaz, 1497
Powellite, 1406, 1411, 1418, 1427
Powers, M. C., on chlorite, 161
Pozzolan cement, 637
Precambrian, Blind River uranium district, Ont., 660, 664, 909
Finland (review), 1315
Garon Lake sulfide district, Que., 346
India, Kolar gold field, 1429, 1434
manganese deposits, 828, 833
Mesabi district, Minnesota, 1008
Mistassini district, Quebec, 312
ore deposits, western U. S., 1624
placers, Idaho, 789
taconite, Minn., 563
tungsten deposits, Colo.-Wyo., 1408, 1424
Yellowknife district, N.W.T., 1593
Precambrian gneisses of Colorado, Scheelite in the (Tweto), 1406
Precambrian mineralization of the Coeur d'Alene district, Idaho, Isotopic composition of lead and (Long, Silverman, Kulp), 645; discussion, 1565
Precious stones and pearls (review), 208
Preuner, G., and Brockmoller, L., on arsenic vapor pressures, 1367
Price, P., on cordierite, 351
Proctor, P. D., abstract by, 1341
on ores, Silver Reef, Utah, 835
Proctor, P. D., *et al.*, on Allens Ranch fault, Utah, 1143
Professional aspects of geological engineering, Curricular and (Neilson, Snelgrove and Van Pelt), 1048
Prospecting, alluvial deposits, U.S.S.R. (review), 1071
copper, geochemical prospecting, Jefferson Co., Colo. (abstract), 1329
Garon Lake district, Quebec, 339
geochemical prospecting (review), 1567
kaolinitic sediments, Florida, 1403
metals, fractionation by crystallization, 1283
molybdenum geochemical tests, 1243
oil and gas geochemical methods, U.S.S.R. (review), 1315
ores, magmatic and non-magmatic ores (abstract), 1328
thermoluminescence method (abstract), 1340
Prospecting and appraisal of niobium-bearing carbonatites by x-ray methods, Geochemical (Van Wambeke), 732
Pruss, D. E., and Freeman, G. W., abstract by, 1335
Pryor, T., on geology, Kolar gold field, India, 1433
Pseudobrookite, 843, 1070
Pseudomorphs, antigorite after pyroxene, 332
argentite after acanthite, 762
brannerite after uraninite, 920
chalcocite after pyrite, 405
chlorite after biotite, 1194
chlorite-talc after anthophyllite, 351
dolomite after quartz pebbles, Ont., (abstract), 1332

Pseudomorphs—*Continued*
kelyphitic intergrowths after garnet, 260
lithiophorite after pyrolusite, 295
manganese oxide after garnet, 290
marcasite after franckeite, 576
pyrite after detrital grains (discussion), 1758
pyroxene after hornblende, 1251
sericite after plagioclase, 67
thucholite after uraninite, 1721
tourmaline after biotite, 252
Psilomelane, 11, 44, 46
Pudovkina, I. A., on photocells, 1306
Purdue, A. H., on Jefferson City ores, Tenn., 986
on zinc-lead southern Appalachian district, 1088
Puri, H. S., on Ocala group, Florida, 1386
Puri, H. S., and Vernon, R. O., on Hawthorne formation, Fla., 1383
Pyle, J. H., on davidites, 1543
Pyrite, 78, 83, 142, 144, 218, 252, 253, 350, 366, 388, 404, 412, 447, 514, 516, 523, 526, 546, 549, 575, 578, 588, 618, 672, 676, 679, 685, 711, 823, 889, 896, 921, 936, 981, 1074, 1135, 1137, 1166, 1175, 1176, 1193, 1203, 1314, 1346, 1348, 1354, 1360, 1363, 1374, 1468, 1471, 1484, 1485, 1519, 1530, 1561, 1599, 1619, 1693, 1700, 1712, 1752, 1758
massive deposits in eugeosynclines (abstract), 1327
oxidation electrode potential, Colo., 1223
sulfide ore bodies, Yauricocha, Peru (discussion), 1070
Witwatersrand (review), 1318
Pyrochlore, 732, 733, 735, 736
Pyrochroite, 9
Pyrolusite, 9, 285, 286, 287, 292, 295, 297, 301, 306
Pyrophanite, 13
Pyrophyllite, 154
Pyrorthite, 1722, 1727, 1737
Pyroxenes, 533, 1418
Pyrrhotite, 218, 350, 550, 575, 578, 600, 672, 682, 818, 825, 1177, 1193, 1224, 1225, 1346, 1348, 1363, 1381, 1447, 1471, 1599, 1631, 1643, 1693, 1701

Quartz, 56, 59, 63, 68, 138, 143, 252, 282, 291, 335, 363, 364, 370, 487, 490, 502, 504, 533, 566, 598, 673, 676, 887, 890, 894, 1140, 1178, 1192, 1297, 1396, 1412, 1419, 1446, 1447, 1471, 1484, 1502, 1511, 1754
Quartz deposits of the Yellowknife district, Sudfur isotope investigation of the gold (Wanless, Boyle, and Lowdon), 1591
Quaternary, Connecticut, north-central Conn., 107
U.S.S.R., Soviet Arctic (review), 1570
Quebec, Canada, Composition and age of the Temiscamie iron-formation, Mistassini Territory (Quirke, Goldich, Krueger), 311
Discovery of a copper-zinc deposit at Garon Lake (Joklik), 338
ilmenite rock deposits, origin, 641
iron, ore exploration and development, 1056
Mattagami area, geology and ore deposits (abstract), 1326
sulfides, mill feed samples, 117
thucholite, 1720
Queensland, davidites, 1544
lead-zinc, Mt. Isa deposit, source-bed concept (discussion), 615
Quenouille, M. H., on coefficient of medial correlation, 379
Quenselite, 12
Quirke, T. T., on organic matter, Besner mine, Ont., 1721
Quirke, T. T., Jr., Goldich, S. S., and Krueger, H. W., *Composition and age of the Temiscamie iron formation, Mistassini Territory, Quebec, Canada*, 311–326

Rad, 352
Radioactivity, aluminum metal (communication), 1060, 1061
bauxite, 1653, 1654, 1660
Boulder batholith, Mont., 62, 374
Cane valley sands, Colo. Plateau, 725
carbonatite deposits, 737
hydrocarbon polymerization, 1721
Mississagi paleo-channel, Ontario, 718
rocks, Blind River, Ont., 674, 690
uranium, oxidation, 1735
Radiochemistry, molybdenum, 1240
Radon, 63
Rafter, T. A., on PbS, 548
on sulfate, 1620
Rafter, T. A., Wilson, S. H., and Shilton, W. B., on sulfur isotopes, N. Z., 1688
Rahlfs, P., on cubic hessite, 1158
Ralston, O. C., *et al.*, on sulfides, 1204
Ramachandra Rao, M. B., on rocks, Kolar schist belt, India, 1432
Raman, C. V., on opal, 366
Ramachandra, A. V., with Narayanaswami, S., and Ziauddin, M., *Structural control and localization of gold-bearing lodes, Kolar gold field, India*, 1429
Ramdohr, P., on brannerite, 920
on intergrowths, 759, 768
on manganese oxide minerals, 300
on manganese oxides, 2
on metamorphism, Rand, 689
on reflectivity values of minerals, 1309
on uraninite, 842
on Witwatersrand conglomerate deposits, 714

Ramdohr, P.—*Continued*
review of book by, 1074
review of translated monograph by, 1318
Ramsdellite, 9, 304, 306
Rancieite, 10
Rankama, K., and Sahama, T. S., on bromine, 633
on molybdenum, 1232
on niobium, 733
on strontium, 177
on tungsten, 1424
on water, 950
Ransome, F. L., on Bisbee area, Ariz., 935
on manganese minerals, 4
on silica, 596
Ransome, F. L., and Calkins, F. C., on ores, 123
on lead ore, Idaho, 646
Rare earths, apatite lattice enrichment, 357
Blind River, Ontario, 684
carbonatite deposits, 737
occurrence in davidite, 1034
Rasor, C. A., on hetaerolite, 12
Rattigan, J. H., *Residual characteristics of crystallates genetically associated with ore deposits*, 1272–1284
Raub, E., and Walter, P., on iron, 1375
Rayner, E. O., on davidite, 1542
Realgar, 1348
Rechenberg, H., on sulfides, 1206
Red mud, thorium and uranium, concentration by milling bauxite, 1667
thorium and uranium content (communication), 1060
Reed, J. C., and Hansell, J. M., on cinnabar, 1551
Reefs, Jefferson City district, Tenn., 985, 995, 997
pyrite, sulfide ore bodies, Yauricocha, Peru (discussion), 1070
Reichert, S. O., on hausmannite, 22
Reid, R. R., abstract of paper by, 1325
on scheelite, Mont., 1427
Reinecke, L., on gold ore shoots, 715
on uraninite, 141
Rejuvenation of mineral deposits, ore deposits, 807
lead, Idaho, Coeur d'Alene district, 653, 656, 657
placers, central Idaho, 293
tungsten deposits, Colo., 1406, 1424
uranium, Blind River district, Ont., 688
Rejuvenation of pitchblende in Hercynian ore deposits (Davidson), 383
Replacement, calcite by phosphorite, 354
garnet by manganese oxides, India, 831
ilmenorutile-monazite deposit, Idaho, 1194
Jackpile uranium mine, New Mexico, 456
labradorite by ilmenite, 641
Replacement—*Continued*
ores, Bolivia, 575, 601
East Tintic district, Utah, 1134
manganese oxides, Ghana, 284, 286, 287
zinc, Jefferson City mine, Tenn., 989
pyrite by gold tellurides, 1463
pyrrhotite by pyrite, 594, 601
quartz by uraninite, 148
sedimentary rocks by barite, 632
sulfides, Garon Lake, Que., 338, 350
west equatorial Africa, 1709, 1714
uranium ores, Pronto deposit, Ont. (abstract), 1332
Reviews—
Almaznye mestorozhdeniya Yakutii (diamond deposits of Yakutia) (Bobrievich), Davidson, 1569
Anglo-America: A regional geography (Shaw), 209
Application de la géologie aux travaux de l'ingénieur (Goguel), 1318
Atlas vulkanov SSSR (atlas of the volcanoes of the USSR) (Svyatlovskii), Davidson, 851
Beaches and coasts (King), Harrison, 1071
Boston, a topographical history (Whitehead), McKinstry, 620
Bradley Volume, American Journal of Science, 1766
Chetvertichnye otlozheniya Sovetskoi Arktiki (Quaternary deposits of the Soviet Arctic) (Strelkov), Davidson, 1570
Contemporary geodesy (Whitten and Drummond), 208
Cours de cristallographie, Vol. II, Cristallographie physicochimique (course in crystallography. Vol. II. Physical-chemistry crystallography) (Gay), Winchell, 850
Dana's manual of mineralogy, 17th edit. (Hurlburt), 416
Edelsteine und Perlen, 2nd edit. (Schlossmacher), 208
Everyday meteorology (Miller and Parry), 207
Future of non-ferrous mining in Great Britain and Ireland—A symposium, 854
Gemstones of North America (Sinkankas), 1073
General crystallography: A brief compendium (de Jong, *et al.*), Winchell, 620
Geokhimicheskie metody poiskov neftyanykh i gazovykh mestorozhdenii (geochemical methods of prospecting for oil and gas deposits), Davidson, 1315
Geokhimiya berilliya i geneticheskie tipy berillievykh mestorozhdenii (geochemistry of beryllium and the genetic types of beryllium deposits) (Beus), Davidson, 1570

Reviews—Continued
Geological nomenclature (1959) (Schieferdecker), Amstutz, 1072
Geologicheskoe stroenie i almazonosnost' yugo-zapadnoi chasti Sibirskoi platformy (geological structure and diamond-bearing deposits of the southwest part of the Siberian platform) (Dibrov), Davidson, 1569
Geologiya rudnykh mestorozhdeniy (geology of ore deposits) (Betekhtin), Alexandrov, 401
Geologiya v Rossii pervoi poloviny 19 veka (geology of Russia in the first half of the 19th century) (Tikhomirov), Davidson, 1761
Geologiya · zhelezisto-kremnistykh formatsii Ukrainy (geology of the siliceous iron formation of the Ukraine) (Semenenko *et al.*), Davidson, 852
Geology: Principles and processes, 5th edit. (Emmons, *et al.*), 1766
Geology for engineers, 2nd edit. (Trefethen), 207
Geology of the East Tintic Mountains and ore deposits of the Tintic mining districts, Couvering, 1762
Geotektonische Forschungen, Heft 13. Die Kleintektonische Arbeitsweise unter besonderer Berücksichtigung ihrer Anwendung im deutschen Paläozoikum (Geotectonic researches, No. 13. The microtectonics method with special reference to its use on the German Paleozoic) (Engels), 1316
Hydrology, 2nd edit. (Wisler and Brater), 854
Igneous and metamorphic geology, 2nd edit. (Turner and Verhoogen), 621
Industrial minerals and rocks, 3rd edit. (Gillson), 853
International Tin Council, Statistical Year Book 1959, 1073
Istoriya geologicheskogo issledovaniya Sibiri (history of the geological investigation of Siberia) (Obruchev), Davidson, 852
Izbrannye sochineniya (selected works of V. I. Vernadskii), Davidson, 1315
Izumrudnye kopi (emerald mines) (Vlasov and Kutukova), Davidson, 1571
Kratkii kurs geologii S.S.S.R. (brief course on the geology of the U.S.S.R.) (Shlygin), Davidson, 1760
Kristallicheskii fundament Finlyandii (crystalline basement of Finland) (Väyrynen) Davidson, 1315
Kurs Mineralogii (course in mineralogy, Pts. I and II) (Lazarenko), Davidson, 851
Lovozerskii shchelochnoi massiv (Lovozero alkali massif) (Vlasov, Kuzmenko, and Eskova), Davidson, 852

Reviews—Continued
Materialy po geologii poleznykh iskopaemykh Yakutii (contributions to the economic geology of Yakutia), Davidson, 851
Materialy po geologii rudnykh mestorozhdenii, petrografii, mineralogii i geokhimii (contributions on the geology of ore deposits, petrography mineralogy, and geochemistry), Davidson, 1762
Mestorozhdeniya kobal'ta (Krutov), Davidson, 1570
Mestorozhdeniya urana i zarubezhnykh stran (uranium deposits of foreign countries) (Gerasimovskii), Davidson, 1316
Mineral equilibria at low temperature and pressure (Garrels), 622
Mineralogiya, tipy mestorozhdenii i osnovnye cherty geokhimii selena i tellura (mineralogy, types of deposit, and principal features of the geochemistry of selenium and tellurium) (Sindeeva), Davidson, 1316
Minerals of New Mexico, 2nd edit. (Northrop), 1073
New observations on the ores of the Witwatersrand and their genetic significance (Ramdohr), 1318
New Zealand coals (Suggate), Cady, 415
Obshchaya geologiya (general geology) (Lange, Ivanova, and Lebedeva), Davidson, 852
Olovonosnost' tsentral'nogo Kazakhstana (tin-bearing formations of central Kazakstan) (Zhilinskii), Davidson, 852
Osnovnye cherty magmatizma i metallogenii Chatkalo-Kuraminskikh Gor (general outlines of the magmatism and metallogeny of the Chatkalsk-Kuraminsk Mountains) (Abdullaev), Davidson, 849
Osnovy obshchei paleogeografii (principles of paleogeography) (Rukhin), Davidson, 1762
Our mineral resources (Riley), McKinstry, 848
Petroleum geology, 2nd edit., (Landes), 417
Physical geography, 2nd edit. (Strahler), 1766
Physics and chemistry of the earth, Vol. 3 (Ahrens, *et al.*), 1571
Physics and geology (Jacobs, Russell, Wilson), 621
Physiochemical principles of analysis of the paragenesis of minerals (Korzhinsky), Alexandrov, 1566

Reviews—Continued
Povedenie zolota v zone okisleniya zoloto-sulfidnykh mestorozhdenii (behavior of gold in the zone of oxidation of auriferous sulfide deposits (Kreiter, *et al.*), Davidson, 1761
Poznaniyu diageneza osadkov (Knowledge on the diagenesis of sediments) (Strakhov, editor), Davidson, 1571
Principles of geochemical prospecting (Ginzburg and Sokoloff), Hawkes, 1567
Principles of geology (Bain), 620
Principles of mineralogy (Dennen), 853
Problemy rudnykh mestorozhdenii (problems of ore deposits) (Sokolov), Davidson, 850
Regional'naya stratigrafiya Kitaya (regional stratigraphy of China), Davidson, 1760
Rocks to riches (Dunning and Peplow), 418
Sea off southern California (Emery), 1317
Shlikhovaya s'emka i analiz shlikhov (alluvial prospecting and the analysis of heavy concentrates) (Ozerov), Davidson, 1071
Short reviews of new Russian books, Davidson, 850, 1315, 1760
Soupis periodik geologických věd (Index of periodicals in geological science) (Lomský), Davidson, 849
Stratigraphy of the pre-Simpson Paleozoic subsurface rocks of Texas and southeast New Mexico (Barnes *et al.*), 1074
Structural methods for the exploration geologist (Bagley), 417
Study of rocks in thin section (Moorhouse), 207
Subsurface mapping (Bishop), 1317
Tektonika SSSR (tectonics of the USSR) (Offman and Chumakov), Davidson, 1570
Uran- und Gold- Lagerstätten Witwatersrand—Blind River—Dominion Reef—Serra de Jacobina (the uranium and gold deposits Witwatersrand—Blind River—Dominion Reef—Serra de Jacobina) (Ramdohr), 1074
Water witching U.S.A. (Vogt and Hyman), Amstutz, 1765
Zakonomernosti razmeshcheniya poleznykh iskopaemykh (regularities in the disposition of ore deposits), Davidson, 1761
Zapiski Vostochno-Sibirskogo Otdeleniya Vsesoyuznogo Mineralogicheskogo Obshchestva (memoirs of the East Siberian Division of the All-Union Mineralogical Society), Davidson, 1316
Rhabdophanes, 1545
Rhenium, Braden copper ores, Chile, 888
geochemistry (communication), 607
Rhode Island, folds, 973
Rhodes, D. W., and Nelson, J. L., on ion exchange material, 356
Rhodochrosite, 891
Ricci, J. E., on vapor pressure of system, 1358
Richard, K., and Courtright, J. H., on Braden copper district, Chile, 901
Richardson, F. D., and Jeffes, J. H. E., on Ag_2S, 764
Richardson, K. A., with Adams, J. A. S., *Thorium, uranium and zirconium concentrations in bauxite*, 1653
Richmond, W. E., and Fleischer, M., on cryptomelane, 10
Richter, D. H., and Ingerson, E., on inclusions, 506
Richter, G., on copper, 705
Ridge, J. D. abstract by, 1330
Ridland, G. C., on ore mineralogy, Yellowknife area, N.W.T., 1593
Ries, H., on clay, 634
on quartzite pebbles, 1399
Riley, C. M., review of book by, 848
Ringwood, A. E., on davidite, 1548
on magmas, 1275
Rinne, F., and Boeke, H. E., on pyrrhotite, 1349
Riordon, P. H., on asbestos, Que., 333
on serpentine, 631
Rittenhouse, G., on bedload transportation, 842
on heavy minerals, 411
Rivers, Sr in river water, Champaign Co., Ohio, 184
Roberts, H. S., on pyrrhotite, 1349
Roberts, W. A., and Gude, A. J., III, on Free Enterprise uranium mine, Mont., 59
Robertson, D. S., abstract by, 1341
Robertson, D. S., and Steenland, N. C., *On the Blind River uranium ores and their origin*, 659–694
discussion of a paper by, 1562
on conglomerate, 668
on heavy minerals, Blind River, Ont., 1753
on uranium ores, Blind River, Ont., 908
Robinson, C. S., and Rosholt, J. N., Jr., abstract by, 1332
Robinson, W. G., on Indicator Lake series, Quebec, 319
Rock, New geochemical method for the determination of molybdenum in soil and (Perry), 1232
Rocks, Patterns to ores in layered (Bain), 695
alteration, chemical changes, Alaska, 1491
bauxite parent rocks, 1656
carbonaceous materials, classification, 1717

Rocks—Continued
Goodsprings district, Nevada, spectroscopy, 1110
Journal of Petrology (review), 1765
mechanical properties (review), 1318
oxidation potential control by minerals, 950
planar elements and drill-hole deviation, Ont. (abstract), 1342
sulfur isotope ratios, New Brunswick, 554
Yellowknife district, N.W.T., 1599
thin section study (review), 207
Rocks and industrial minerals (review), 853
Rodgers, J., on manganese, 17
Rods, 453
Roedder, E., abstract by, 1337
Rogers, A. F., on braunite, 11
Rogers, J., on zinc-lead, southern Appalachian district, 1088
Rolls, 724, 1339
San Juan uranium district, New Mexico, 454, 458
Romo, L. A., and Roy, R., on clay, 1489
Rooksby, H. P., on boehmite, 1285
Roscoe, S. M., discussion by, 410
discussion of paper by, 1561
on Blind River area, Ont., 907
on Mississagi series, Ont., 1751
on stratigraphy, Blind River area, Ont., 661
on Th:U ratios in conglomerates, 411
Roscoe, S. M., and Steacy, H. R., on Blind River area, Ont., 908
on heavy minerals, 411
on ThO_2:U_3O_8 ratios, Ont., 1563
Rose, A. W., on sphalerite, 825
Rose, T. K., on Au-Te system, 1149
Roseboom, E. H., on synthetic $FeAs_2$, 1350
Rosenqvist, T., and Dunicz, B. L., on sulfur solubility in α-iron, 1363
Rosholt, J. N., Jr., abstract by, 1342
Ross, C. S., and Hendricks, S. B., on clay minerals, 634
on montmorillonite, 155
Ross, C. S., and Kerr, P. F., on clay minerals, 634
on galaxite, 12
Ross, V., on sulfides, 760
Rothrock, H. E., Johnson, C. H., and Hahn, A. D., on manganese oxides, 47
Roubault, M., on pitchblende, 385
Rowe, R. B., on pegmatites, 638
Rowland, J. F., and Berry, L. G., on tellurides, 1153
Roy, D. M., and Mumpton, F. A., on willemite, 1099
on ZnO-SiO_2-H_2O system, 844
Roy, R., and Osborn, E. F., on argillic minerals, 1479
on kaolin minerals, 154
on kaolinite, 71
Roy, D. M., and Roy, R., on argillic minerals, 1479
on montmorillonite, 70
on talc, 154
Ruanda, cassiterite, inclusions, 490
Rubidium, Arkansas, Bellah mine (communication), 1554
Ruff, O., and Mudgan, S., on arsenic vapor pressures, 1367
Rukhin, L. B., review of textbook by, 1762
Russell, M. D., Hiemstra, S. A., and Groeneveld, D., on carbonatites, 737
Russell, R. D., reply to a discussion by, 840
Russell, R. D., and Allan, D. W., on lead, 650
Russell, R. D., and Farquhar, R. M., on lead isotopes, 1689
Russell, R. D., Farquhar, R. M., and Hawley, J. E., on lead, 655
Russell, R. D., Farquhar, R. M., and Stanton, R. L., on lead, 1701
Rutile, 618, 1313, 1541
Rutile deposits in northern Lemhi County, Idaho, Genetic aspects of the monazite and columbium-bearing (Anderson), 1179
Ryan, W., and Maple, P. J., analysis by, 1033
Ryhage, R., with Gavelin, S., and Parwel, A., *Sulfur isotope fractionation in sulfide mineralization*, 510

Sainsbury, C. L., *Metallization and post-mineral hypogene argillization, Lost River tin mine, Alaska*, 1478–1505
Sakai, H., on sulfides, 513
on sulfur, 74
on sulfur isotopes, 1597
enrichment, 555
fractionation, 1688
Sales, R. H., *Critical remarks on the genesis of ore as applied to future mineral exploration*, 805–817
on ore fluids, 1257
on solutions, 596
reply to a discussion by, 402
Sales, R. H., and Meyer, C., on alteration, 903, 1479
on sericite, 596
Salt-water body in the Magothy (?) formation in the Cedarhurst-Woodmere area of southwestern Nassau County, Long Island, N. Y., Position of the (Lusczynski and Swarzenski), 1739
Samples, coalified logs, Colo. Plateau, 1040
Samples of opaque ore minerals for quantitative microscopic analysis, Method of mounting minute particulate (Dillinger and Sclar), 187
Sampling, Connoquenessing sandstones, Pa., 1297
geochemical prospecting, Burgin mine, Utah, 1537

Sampling—*Continued*
intrusive sampling for metal abundances, New Mexico, 1246
molybdenum in rocks and soils, 1232
siliceous-uranium veins, Mont., 65
sulfide mill feed composites, 116
Samson, H. R., and Wadsley, A. D., on lithiophorite, 299
San Juan basin, New Mexico, Uranium deposits of the southern part of the (Hilpert and Moench), 429
San Manuel mine, Arizona, sulfide oxidation study, 935
Sand, L. B., Roy, R., and Osborn, E. F., on Na-montmorillonite, 1500
Sand, 639
Geochemical investigation of the Athabasca bituminous (Champlin and Dunning), 797
Athabasca sand, Alberta, 801
Florida, kaolinitic deposits, Lake Wales Ridge area, 1382, 1394
sulfur sand, Guatemala, 537
vug-filling sand, Tenn., 992, 993
Sandell, E. B., on MoO_2Cl_2, 1237
Sandell, E. B., and Goldich, S. S., on copper, 1257
on metals, 120
Sandstones, French Equatorial Africa, Mindouli sulfide deposit, 1711, 1712
Michigan, White Pine copper deposit (discussion), 402
New Mexico, Morrison deposits, alteration (discussion), 1758
San Juan basin, 433, 446, 455
uranium, determination of age of migration (abstract), 1342
uranium and thorium content (discussion), 1563
Utah, Silver Reef area (communication), 835
uranium-vanadium, Lisbon Valley deposits, origin (abstract), 1339
Wyoming, uranium, age and migration (abstract), 1332
Sandstones and the occurrence of high-alumina Mercer clay, Relationship between the stratigraphy and petrography of Pottsville (Williams), 1291
Sanford, S. S., and Steward, L. A., on manganese oxide, 30
Sarcia, J. A., *et al.*, on pitchblende, 385
Saskatchewan, arsenopyrite, Hanson Lake, 1644
Beaverlodge uranium area, structural history (discussion), 617
pitchblende, Athabaska deposits, rejuvenation, 386
Verna mine, argillite (communication), 1305
sulfides, mill-feed sampie, 117
thucholite, 1720
Sato, M., *Oxidation of sulfide ore bodies, I. Geochemical environments in terms of Eh and pH*, 928–961
II. Oxidation mechanisms of sulfide minerals at 25° C, 1202–1231
abstract by, 1331
on oxidation potentials, 1213
Satpaeva, T. S., Kalinin, S. K., and Fain, E. E., on rhenium, 607
Satterly, J., on betafite, 733
Savage, C. N., *Nature and origin of central Idaho blacksands*, 789–796
Scerbina, V. V., on oxidation potentials, 929
Schaller, W. T., chemical analysis by, 29
Schaphacite, 762, 782
Scheelite, 492, 494, 504
Scheelite in the Precambrian gneisses of Colorado (Tweto), 1406
Schenck, R., and Pardun, H., on Bi-S, 763
Schieferdecker, A. A. G., review of dictionary by, 1072
Schirmerite, 762, 782
Schlagintweit, O., on Puca formation, Bolivia, 220
Schlee, J. S., on sandstone, 435
Schleicher, A. P., on gold-arsenic system, 1381
Schlossmacher, K., review of book by, 208
Schmedeman, C. C., on sericite, 596
Schmitt, H., on a laccolith, Hanover, New Mexico, 1249
Schneiderhöhn, H., on granite, vii
on visual photometers, 1306
Schnellmann, G. A., discussion by, 205
Schoeller, H., on ground-water chemistry, 950
Schossberger, F., on pyrolusite, 280
Schubert, E., on marcasite, 1349
Schuiling, H. J., and Oosterbosch, R., on sulfides, 710
Schultz, L. G., on chlorite, 161
on kaolinite and illite, 1297
Schumb, W. C., Satterfield, C. N., and Wentworth, R. L., on hydrogen peroxide, 947
Schurmann, H. M. E., *et al.*, on granite, 384
Schwartz, G. M., on alkali feldspars, 557
on alteration, 733
on alunite, 155
on argillized rock, 1503
on bleb patterns, 395
on gold, 1646
on ore deposits, 806
on San Manuel mine, Ariz., 935
on sulfides, 904, 1204
Schwarz, R., and Trageser, G., on pyrophyllite, 154
Sciences, geological training and the sciences, 1054
history, reprint of V. I. Vernadskii's book (review), 1315

Scientific Notes and News, 215, 426, 628, 861, 1081, 1343, 1590
Scintillometer prospecting for carbonatites, 737
Sclar, C. B., with Dillinger, L., *A method of mounting minute particulate samples of opaque ore minerals for quantitative microscopic analysis*, 137
Scotland, birnessite, 10
serpentine, x-ray data, Shetland Islands, 158
Scott, H. S., on decrepitation, 489
Scott, J., Collins, G. A., and Hodgson, G. W., on vanadium porphyrin, 800
Scott, P. W., and Botts, S. D., fluorine determination by, 1485
Searls, F., Jr., discussion by, 1565
Secrist, M. H., on Jefferson City ores, Tenn., 986
on zinc-lead, southern Appalachian district, 1088
Sections, Bending Lake iron prospect, Ont., 482
Blind River basin, Ont., 663
Blind River district, Ont., 915
Braden pipe, Chile, 884
Cedarhurst-Woodmere area, N. Y., 1743
chrysotile deposit, Baie Verte, Newfoundland, 400
East Morococha district, Peru, 974
East Vermilion Cliffs area, Ariz., 140
India, Koduru manganese area, 833
Kolar gold belt, 1445
Lost River tin mine, Alaska, 1482
manganese oxide deposits, 24
Mindouli sulfide deposit, French Equatorial Africa, 1711
ore districts, Bolivia, 221, 228, 237, 239
orebodies and blebs in sphalerite, Moore mine, Ariz., 392
Pottsville group, Clearfield and Clinton Cos., Pa., 1301
Putnam Co., Florida, 1385
Rhodesian copper ores and monadnocks, 710
San Juan basin, New Mexico, 435, 451, 454
Sterling mine, N. J., 82
subsurface mapping (review), 1317
Tintic mining districts, Utah, 1528
Sedimentary features Jefferson City mine, Tennessee, Ore deposits and (Kendall), 985
Sedimentary rocks, Blind River area, Ont., 664, 675
Braden region, Chile, 871
Congo-Rhodesian copper belt, 708
East Tintic district, Utah, 1126
Huronian, Blind River, Ont., 911
manganese content, southeast U.S., 17
Mesabi district, Minn., 1010
ore patterns in layered rocks, 696
Pottsville group, Pa., 1292
San Juan basin, New Mexico, 433, 449
Sedimentary rocks—*Continued*
sulfur isotopes, Yellowknife, N.W.T., 1614
taconite, Minn., 563
Texas and New Mexico, pre-Simpson deposits (review), 1074
tungsten content, Uganda, 1424
uranium content and radioactivity (discussion), 410
White Pine district, Mich. (discussion), 402
Witwatersrand conglomerates (discussion), 842
Sedimentation, alum shales, Sweden, 702
Biwabik formation, Minnesota, 1024
blacksand placers, Idaho, 791
Blind River sedimentary rocks, Ont., 690, 692
breccia pipe formation, San Juan basin, New Mexico, 441
California, coastal seas (review), 1317
Citronelle formation, Florida, 1390, 1395, 1398
conglomerate, Witwatersrand (discussion), 842
Connoquenessing sandstones and Mercer clay, Pa., 1300
diagenesis of sediments (review), 1571
Huronian, Blind River, Ont., 911, 925
ilmenite alteration, New Jersey (discussion), 1759
swamp deposits, Md. (discussion), 618
magnesite and dolomite, Caspian Sea (abstract), 1338
Mercer clay and Pottsville sandstones, Pa., 1291
Rand conglomerates, Transvaal, 716
Shinarump conglomerates, Colorado Plateau, 725
sulfides, Bathurst-Newcastle area, New Brunswick, 1683
syngenetic mineral deposits, 728
vug-filling sand, Tenn., 992, 993
White Pine district, Mich. (discussion), 402
Sediments, Extractability of humic acid from coalified logs as a guide to temperatures in Colorado Plateau (Breger and Chandler), 1039
bituminous sands, geochemistry, Alberta, 797
borates, California, 633
California, litoral region (review), 1317
carbonaceous materials, classification, 1717
Cedarhurst-Woodmere area, N. Y., 1743
engineering geology (review), 1318
ilmenite alteration in swamp deposits, Md. (discussion), 618
lake sediments, Eh-pH measurements, Wis., 938
mud filling cavities in zinc ore, South West Africa (discussion), 846

Sediments—Continued
sulfurous mud, Lake Ixpaco, Guatemala, 532
uraninite, stability during transport, 689
Sediments in peninsular Florida and origin of the kaolin, Kaolinitic (Pirkle), 1382
Selenium, Arkansas, Ouachita Mtns. (communication), 1553
geochemistry of selenium and tellurium (review), 1316
Selenocosalite, 516
Seligmannite, 1177
Sellards, E. H., on kaolin, 1393
Semenenko, N. P., *et al.*, review of book by, 852
Seminov, E. I., and Barinskii, R. L., on rare-earth minerals, 1545
Senaite, 13
Senftle, F. E., and Brachen, J. T., on isotopic enrichment, 78
Septaria, 1025
Septechlorite, 160
Sericite, 67, 252, 593, 596, 891
Sericitization, 596
Serpentines, 155, 157, 158, 171
origin (abstract), 1338
Serpentinite, 327, 329, 399
Serpophite, 331, 332
Service, H., on Nsuta manganese deposit, Ghana, 280
Shales, Goodsprings district, Nevada, spectroscopy, 1110
Michigan, White Pine copper deposit (discussion), 402
Sweden, metal deposits, 702
Shale-siltstones, mineral deposits, 701
Shand, S. J., analyses by, 269
on coronites, 257
on tourmaline, 598
Shaub, B. M., on garnet ore, 257
Shaw, E. B., review of book by, 209
Shaw, E. W., on rocks, Sevogle River region, New Brunswick, 540
Shawe, D. R., on roll structures, 454
Shearing, 614
Sheeting, ore districts, Bolivia, 250
Shenon, P. J., on design, 1056
Shillibeer, H. A., and Cumming, G. L., on age, Grenville metamorphic rocks, Que., 322
Shinarump member of the Chinle formation in northern Arizona, Detrital-appearing uraninite grains in the (Petersen), 138
Shlygin, E. D., review of textbook by, 1760
Short, M. N., on manganese oxides, 2
on visual photometers, 1306
Short, M. N., and Ettlinger, I. A., on Magma mine, Ariz., 933
Short, M. N., and Wilson, E. D., on Magma mine, Ariz., 933
Short, M. N., *et al.*, on Magma copper mine, Ariz., 933
Shtcherbina, V. V., on titanium, 619
Siderite, 316, 576, 619, 952, 956
Silica, 596, 1394, 1502
Silica sands, Florida, Citronelle sediments, 1382
Silicates, zinc mineral solubilities, 1095
"Siliceous reef" veins in the Boulder batholith, Montana, Primary mineralization of uranium-bearing (Wright and Bieler), 56, 363
Silicification, 253, 592, 596, 887, 1533
Sills, Africa, lower Congo region, 1710
Blind River uranium district, Ontario, 1752
Jackpile uranium mine, New Mexico, 444, 452
Laguna uranium district, New Mexico, 457, 459
Mesabi district, Minnesota, 1009, 1028
Newfoundland, Baie Verte area (communication), 399
serpentine, origin (abstract), 1338
Yellowknife district, N.W.T., 1594
Silman, J. F. B., on antlerite, 1213
Silver, 888
Arkansas, manganese deposits, Polk Co. (communication), 1757
Bolivia, Oruro and Potosi deposits, 217
French Equatorial Africa, black-earth ore, Mindouli sulfide deposit, 1712, 1714
Nevada, Bristol mine, ore deposition (abstract), 1337, 1341
oxidized silver-tin ores, Bolivia, 583
system Ag_2S-Bi_2S_3-PbS, 759
system Au-Ag-Te, 1148, 1460
Utah, East Tintic district, 1134, 1509
Burgin mine, 1535
Silver Reef ores, genesis (communication), 835
Witwatersrand, conglomerate deposits, 714
Silverman, A. J., with Long, A., and Kulp, J. L., *Isotopic composition of lead and Precambrian mineralization of the Coeur d'Alene district, Idaho,* 645; discussion, 1565
Silverman, S. R., on isotopic oxygen, 80
Simmons, W. C., on tin, 507
Simonds, F. S., on crednerite, 13
Simons, F. S., and Straczek, J. A., on manganese oxide, 37
Simpson, E. S., analysis by, 1167
on gold tellurides, 1163
Sims, P. K., abstract by, 1328
Sindeeva, N. D., review of book by, 1316
Singewald, J. T., Jr., on Porvenir mine, Bolivia, 590
Treasurer's report to the S.E.G., 1586
Sink holes, breccia and pebble columns with hydrothermal deposits (abstract), 1334
fluorite, Mexico, Guerrero, 637
Sinkankas, J., review of book by, 1073

Sitaparite, 11
Sitter, L. U., on Givetian limestone, Spain, 1288
Sjögren, H., on inclusions, 493
Skarn, 964
Skellefte sulfide district, Sweden, sulfur isotopes, 523
Skewes, H. R., Wadsley, A. D., and Walkley, A., on gamma MnO_2, 303
Skey, W., on sulfides, 1205
Skinner, B. J., on fluid inclusions, 506
on sphalerite, 819
Skinner, B. J., Barton, P. B., and Kullerud, G., on sphalerite, 1644
Skinner, D. A., on metal-porphyrin, 801
Skinner, R., on granite, 1701
Slag, rhenium content (communication), 609
Slates, sulfur isotope ratios, Yellowknife, N.W.T., 1617, 1618
Slavik, F., on nacrite, 156
Slickensides, 970, 1532
Smeeth, W. F., on Kolar gold field, India, 1432
Smith, A. M., on geology, Kolar gold field, India, 1433
Smith, B. P., on folds, 1432
Smith, C. H., and Skinner, R., on Bathurst-Newcastle area, N.B., 1683
on H. Steele "sediments," New Brunswick, 540
Smith, C. W., on cerium, 738
Smith, F. G., on cassiterite, 487
on greisen, 1485
on tourmaline, 598
Smith, F. G., and Little, W. M., on decrepitation, 489
Smith, F. G., and Peach, P. A., on inclusions, 489
Smith, W. C., on borate sediments, 633
Smitheringale, W. V., on Cassiar asbestos mine, Brit. Columbia, 327
Smithson, F., and Brown, G., on dickite, 154
Smithsonite, 1084, 1086, 1088, 1091, 1095, 1113
Smythite, 1225, 1350
Snedecor, G. W., on correlation coefficient, 1252
Snelgrove, A. K., on Labrador-Quebec iron range, 1057
Snelgrove, A. K., and Baird, D. M., on cordierite, 351
Snelgrove, A. K., with Neilson, J. M., and Van Pelt, J. R., *Curricular and professional aspects of geological engineering*, 1048
Society of Economic Geologists, Denver, Colo., Meeting, 1323
abstracts of papers presented before, 1325
Proceedings for the year 1959, 1580
Translation of 50th Anniversary Volume (review), 850
Soil and rock, New geochemical method for the determination of molybdenum in (Perry), 1232
Soils, niobium-bearing soils from carbonatites, 738, 740, 742
terra rossa, radioactivity, Africa, 1655
Sokoloff, V. P., review of translation by, 1567
Sokolov, G. A., review of translation edited by, 850
Solid inclusions, 498
Solubility, uranium by hydrogen peroxide, 1736
zinc minerals, 1089
Solutions, ore solutions, Bolivia, 596
Sorby, H. C., on tin ore, 487
Sorem, R. K., and Cameron, E. N., *Manganese oxides and associated minerals of the Nsuta manganese deposits, Ghana, West Africa*, 278–310
South Africa, asbestos, 631
South Australia, davidites, 1544
chemical analyses, 1033
South Dakota, cassiterite, inclusions, 490, 496
South West Africa, cassiterite, inclusions, 490
davidite, Swakopmund, 1544
willemite, Abenab West deposit (discussion), 844
Southern Rhodesia, sulfides, sulfur isotopic ratios, 78
Spain, Bauxite deposit in the Paleozoic of Leon (Font-Altaba and Closas M.), 1285
cassiterite, inclusions, 491
pegmatites, Hercynian age, 384
Spectroscopy, bauxites, 1653
calc-silicate rocks, Colo., 1417
davidites, 1542
jasperoids, East Tintic district, Utah, 1516
minerals and rocks, Goodsprings district, Nev., 1110
phosphorites, Phosphoria formation, minor elements, Idaho (abstract), 1333
porphyrin complexes from Athabasca oil, 799
siliceous-uranium veins, Mont., 363
Sr in water, Ohio, 180
sulfide ores, 119
sulfur isotopes, 512
thucholite ash, 1723
uraninite, Arizona, 145, 146
vein minerals, Arkansas (communications), 1552, 1554
zinc-lead, minerals, supergene alteration, 1084
Spence, H. S., on thucholite, 1717
Spencer, A. C., on Ely intrusive, Nev., 1625
Spencer, L. J., analysis by, 1167
on calaverite, 1166

Sphalerite, 78, 81, 83, 95, 142, 144, 350, 366, 491, 516, 525, 546, 549, 575, 577, 608, 656, 889, 989, 993, 996, 1095, 1109, 1110, 1144, 1177, 1248, 1336, 1337, 1478, 1499, 1501, 1516, 1551, 1553, 1604, 1643, 1693, 1701
inclusions, freezing points, Colo. (abstract), 1337
oxidation electrode potential, 1226
Sphalerite at Johnson Camp, Arizona, Chalcopyrite blebs in (Baker), 387
Sphalerite geothermometer to some northern New Brunswick sulfide deposits, Application of the (Benson), 818
Sphene, 1188
Spherulites, manganese oxide, Ghana, 292
Spinel, 159, 162
Spinks, J. W. T., discussion by, 206
Splits, 970
Spodumene, 490, 504, 639
Springs, fluorine content, 636
hot springs and ore genesis, 197
manganese oxide deposits near springs, 41
spring deposits, manganese content, 37
Sr in effluent, Champaign Co., Ohio, 185
Sproule, J. C., on Athabasca formation, 797
Spurr, J. E., on taconyte, 565
on zoning, 1551
Spurr, J. E., Garrey, G. H., and Ball, S. H., on Colo. Mineral Belt, 1425
St. Clair Deville, H., on cassiterite, 506
Stam, J. C., *Some ore occurrences of the Mississippi Valley type in Equatorial Africa*, 1708–1715
Stannite, 575, 578, 582, 587
Stanton, R. L., on sulfides, 553, 1683
Stanton, R. L., and Russell, R. D., discussion by, 841
Statistics, correlation coefficient *r*, 1252
Steacy, H. R., on uraninite, 142
Stearns, N. D., on Bruffeys hot spring, Nev., 44
Steenland, N. C., with Robertson, D. S., *On the Blind River uranium ores and their origin*, 659
Steep Rock iron district, Ontario, kaolinite with ores, 175
Steidtmann, E., and Cathcart, S. H., on cassiterite, 1481
Steiner, A., on cassiterite, 1481
Steinfink, H., on chlorite, 162
Steinmann, G., on Caracoles tuff, Bolivia, 222
Stenhouse, J. F., and Armstrong, W. M., on sulfides, 1205
Stern, A., and Dezelic, M., on nickel-porphyrin, 799
Stevens, R. E., and Carron, M. K., on pH of waters, 954
Stevenson, J. S., on niobium, 744
on uranium, 1564
Stewart, F. H., on talc, 154
Stewart, L. A., on asbestos, 631
Stibnite, 888, 1551, 1553, 1604, 1609
Stieff, L. R., on pitchblende, 384, 652
Stieff, L. R., and Stearn, T. W., on lead, 147
Stieff, L. R., *et al.*, on lead isotope ratios, Blind River, Ont., 687
on uraniferous conglomerate, 922
Stieff, L. R., Stern, T. W., and Milkey, R. G., on uranium, 1039
Stieff, L. R., Stern, T. W., and Sherwood, A. M., on coffinite, 445, 1729
Stillwell, F. L., on telluride mineralogy, 1149
on Vatukoula gold field, Fiji, 1466
Stillwell, F. L., and Edwards, A. B., on loellingite-pyrrhotite assemblage, 1353
Vatukoula gold field, Fiji, 1466
Stilpnomelane, 316
Stockwell, C. H., and Kidd, D. F., on Yellowknife district, N.W.T., 1593
Stockworks, Bolivia, 250, 582
copper ore, Braden deposit, Chile, 894, 899, 904
Stoiber, R. E., spectroscopic analyses by, 1111
Stokes, H. N., mineral representation of chemical analyses by, 61
on oxidation of sulfides, 1204
Stokes' Law of Settling Velocities (discussion), 411, 842
Stout, W., Lamborn, R. E., and Schaaf, D., on strontium, 180
Stow, M. H., on springs, 1480
Strahler, A. N., review of revised book by, 1766
Strakhov, N. M., review of book edited by, 1571
Strasburger, E., *et al.*, on bacteria, 536
Stratigraphy, Blind River area, Ont., 663
Bolivia, ore districts, 220
Braden copper area, Chile, 869
Cedarhurst-Woodmere area, N. Y., 1743
China, Communist, stratigraphy (review), 1760
Citronelle sediments, Florida, 1386
Coeur d'Alene district, Idaho, 646
Congo-Rhodesian mineral belt, 708
Connecticut, north-central Conn., 103
East Tintic district, Utah, 1117, 1129
Burgin mine, 1530
East Vermilion Cliffs area, Ariz., 140
Huronian, Blind River, Ont., 911
Jefferson City zinc district, Tenn., 988
Kolar schist belt, India, 1436, 1444
lower Congo region, Africa, 1709, 1710
manganese oxide deposits, Nev., etc., 38
Morococha district, Peru, 963
plotting a horizon (communication), 204
San Juan basin, New Mexico, 431
subsurface mapping (review), 1317
Temiscamie iron-formation, Quebec, 311, 312

Stratigraphy—*Continued*
Tintic and East Tintic mining districts, Utah (review), 1763
U.S.S.R., Geology of Ore Deposits (communication), 401
uranium deposits, Colorado Plateau, 726
Stratigraphy and petrography of Pottsville sandstones and the occurrence of high-alumina Mercer clay, Relationship between the (Williams), 1291
Stratigraphy of the eastern Mesabi district, Minnesota (Gundersen), 1004
Stratigraphy of the manganese deposits of Visakhapatnam and Srikakulam districts, India, Structure and (Krishna Rao), 827
Strelkov, S. A., *et al.*, review of book by, 1570
Stringham, B., *Differences between barren and productive intrusive porphyry*, 1622–1630
on intrusive porphyries, 1622
on montmorillonite, 70
on Precambrian, Utah, 1126
Stringham, B. F., Galbraith, F. M., and Crosby, G. M., on Laramide veins, 655
Strontium, 632
geochemistry, 732, 735, 736
isotopic fractionation (discussion), 206
manganese oxide content, 30
replacement of calcium and phosphorous, 360
Strontium in the surface and ground waters of Champaign County, Ohio, Occurrence of (Feulner and Hubble), 176
Structural control and localization of gold-bearing lodes, Kolar gold field, India (Narayanaswami, Ziauddin, and Ramachandra), 1429
Structural methods (review), 417
Structure, Africa, equatorial Africa, 1708
Beaverlodge area, Saskatchewan (discussion), 617
Blind River district, Ont., 670
Braden copper district, Chile, 878, 882, 902
Bristol silver mine, Nevada (abstract), 1337
California, off-shore region (review), 1317
Coeur d'Alene district, Idaho, 647
East Tintic district, Utah, 1116, 1123, 1126
Burgin mine area, 1528, 1531
Garon Lake sulfide area, Que., 348
H. Steele mine area, New Brunswick, 543
intrusives, New Mexico, 1249, 1259
Jurassic formations and uranium deposits, 449
Kolar gold field, India, 1438, 1445, 1449
microtectonic methods, Germany (review), 1316
Structure—*Continued*
Missouri, Decaturville disturbance (abstract), 1340
Mistassini district, Quebec, 318
Morococha district, Peru, 964
ore districts, Bolivia, 231
porphyries, structural classification of intrusives, 1625
rutile deposits, Idaho, 1182
San Juan basin, New Mexico, 437
sedimentary structures, Mt. Isa lead-zinc mine, Queensland (discussion), 616
subsurface mapping (review), 1317
Tennessee, Mascot-Jefferson City zinc district (abstract), 1326
Texas and New Mexico, pre-Simpson deposits (review), 1075
U.S.S.R. (review), 1570
Geology of Ore Deposits (communication), 401
White Pine district, Mich. (discussion), 403
Yellowknife district, N.W.T., 1594
Structure and stratigraphy of the manganese deposits of Viskhapatnam and Srikakulam districts, India (Krishna Rao), 827
Stull, D. R., and Sinke, G. C., on sulfur, 1223
Subramanian, A. P., on keliphitic intergrowths, 261
Substitution, cobalt, etc., in arsenopyrite, 1641
Substitutions during the formation of phosphorite from calcite, Some cation (Ames), 354
Sudo, T., on chlorite, 164
Sudo, T., and Hayashi, H., on montmorillonite, 164
Sudo, T., and Kodama, H., on chlorite, 164
Sudo, T., Takahashi, H., and Matsui, H., on chlorite-montmorillonite interstratification, 164
Suggate, R. P., review of bulletin by, 415
Sulfates, conversion to SO_2, 1620
sulfur isotopes, 510
ratios, New Brunswick, 548
variations, 1685
Yellowknife district, N.W.T., 1598, 1610
Sulfide deposits, Application of the sphalerite geothermometer to some northern New Brunswick (Benson), 818
Sulfide deposits of the Bathurst-Newcastle area of northern New Brunswick, Sulfur isotopes and the origin of the (Tupper), 1676
Sulfide mineralization, Sulfur isotope fractionation in (Gavelin, Parwel, and Ryhage), 510
Sulfide minerals at 25° C., Oxidation mechanisms of (Sato), 1202

Sulfide ore bodies, Oxidation of (Sato), 928
Sulfide ores, Nickel, cobalt, copper, zinc, lead, and sulfur contents of some North American base-metal (Kilburn), 115
Sulfides, 366, 374, 700
Africa, west equatorial Africa, 1712
auriferous sulfides, oxidation, U.S.S.R. (review), 1761
Blind River area, Ont., 662, 672, 682, 1753
Braden district, Chile, 894
conversion to SO_2, 1615, 1619
Duluth gabbro, Minn., 1028
East Tintic district, Utah, 1144
Garon Lake deposit, Quebec, 338, 348
geophysical prospecting (abstract), 1335
H. Steele mine, New Brunswick, 545
Johnson Camp, Arizona, 387, 388
Kolar gold lodes, India, 1446, 1447
Lost River tin mine, Alaska, 1485, 1489
massive deposits in eugeosynclines (abstract), 1327
ore deposits, Bolivia, 575, 581, 586
oxidation and enrichment, Eh-pH diagrams (abstract), 1331
rhenium content (communication), 609
sulfur control of mineral assemblages (abstract), 1336
sulfur isotopes, ratios, 73
country rocks, New Brunswick, 549, 550, 554
Yellowknife, N. W. T., 1592
Yauricocha ore bodies, Peru (discussion), 1070
sulfur, isotope ratios, H. Steele mine ores, New Brunswick, 539, 545
magmatic and hydrothermal deposits (abstract), 1330
isotopes, sulfur and hydrothermal mineral deposits (discussion), 206
uranium deposits (abstract), 1329
mineral assemblage control (abstract), 1336
oxidation products and behavior, 1204
Sulfur contents of some North American base-metal sulfide ores, Nickel, cobalt, copper, zinc, lead, and (Kilburn), 115
Sulfur isotope fractionation in sulfide mineralization (Gavelin, Parwel, and Ryhage), 510
Sulfur isotope investigation of the gold-quartz de[illegible]its of the Yellowknife district (W[illegible]ss, Boyle, and Lowdon), 1591
Sulfur isotopes and ore deposits (Ault and Kulp), 73
Sulfur isotopes and the origin of the Heath Steele ore deposits, Newcastle, N. B., Canada, Geology (Dechow), 539
Sulfur isotopes and the origin of the sulfide deposits of the Bathurst-Newcastle area of northern New Brunswick (Tupper), 1676
Sulfur mud deposit formed through bacterial transformation of fumarolic hydrogen sulfide (Ljunggren), 531
Sullivan, C. J., abstract by, 1328
on metals, 1683
on ores, 805
on stanniferous granites, 1278
Sullivan, J. D., on sulfides, 1204
Sundborg, A., on heavy minerals, 411
Sundius, N., on metals, 702
Supergene alteration, willemite-hemimorphite relationship (discussion), 844
Supergene alteration of zinc and lead deposits in limestone (Takahashi), 1083
Surinam, bauxites, Th:U ratios, 1664
thorium and uranium, red mud content (communication), 1060
Suzuki, R., on sulfides, 1206
Svyatlovskii, A. E., review of atlas compiled by, 851
Swain, F. M., on sediments, 930
Swain, F. M., and Prokopovich, N., on Eh of sediments, 930
Swanson, H. E., and Tatge, E., on tellurides, 1153
Swanson, H. E., Gilfrich, N. T., and Ugrinic, G. M., on synthetic pyrite, 1349
Swarzenski, W. V., on chloride analysis, 1745
Swarzenski, W. V., with Lusczynski, N. J., *Position of the salt-water body in the Magothy (?) formation in the Cedarhurst-Woodmere area of southwestern Nassau County, Long Island, N. Y.*, 1739
Sweden, alum shales, metal deposits, 702
sulfides, cordierite gneiss, 351
sulfur isotope studies, 510, 514
thucholite, 1720
Syenite, bauxitic parent rocks, 1656, 1669
Sylvanite, 1152, 1157, 1165, 1169, 1468, 1469
Symposiums, ore deposits, metallogenesis U.S.S.R. (review), 1761
Synthesis, arsenopyrite, 1353, 1355, 1632
asbestos, 631
brannerite, 680
clay minerals, *et al.*, 154
gold-silver telluride minerals, 1148, 1151
kaolinite, 154
sericite, 596
topaz, etc., 1500
Synthetic and natural phases in the system Au-Ag-Te (Markham), 1148, 1460
System Ag_2S-Bi_2S_3-PbS, Ternary (Van Hook), 759
System Au-Ag-Te, Synthetic and natural phases in the (Markham), 1148, 1460

Systems, Cu-Fe-S-O, corrections (discussion), 1314
Fe-H_2O and Mn-H_2O oxidation experiments, 942, 944
ZnO-SiO_2-H_2O, 845, 847
Szabo, A., *et al.*, on sulfur, 512

Tables, chemical analyses, arsenopyrite, 1634, 1639
Au-Ag-Te mixtures, thermal products, 1154
bauxite samples, 1656
chemical analysis, bauxite, Spain, 1286
calaverite, Kalgoorlie, Western Australia, 1166
coalified logs and coal, 1041
davidites, 1033, 1544
kaolinite, Putnam Co., Florida, 1384
manganese oxides, 14, 21, 25, 29, 32, 41
rhenium in molybdenites, U.S.S.R. (communication), 607
rocks, altered rocks, Mont., 69
Barton garnet mine, N. Y., 269
rocks and greisen, Lost River tin mine, Alaska, 1492
serpentinites, B. C., 332
strontium in waters, Champaign Co., Ohio, 182
sulfide ores, 119
Temiscamie iron formation, Quebec, 319
thucholites, 1720
uraninite, Ontario, 1726
clay minerals, Lake Superior iron ores, 153
crystalline phases in system Ag_2S-Bi_2S_3-PbS, 762
Eh-pH measurements of mine waters, 934
FeO corrections for U and V, 1031
Hercynian mineralization, Europe, 384
inclusions in minerals, 490
iron arsenides, crystallography, 1351
lead isotopes, Coeur d'Alene, Idaho, 651
Lost River tin mine, Alaska, 1482
manganese oxide minerals, 8
map scales and contour intervals, 203
metal content of jasperoids, Utah, 1517
metal distribution in shales, Sweden, 702
mineralogy, calc-gneisses, Colo., 1416
rims about garnet porphyroblasts, N. Y., 263
minerals, Boulder batholith, Mont., 61
placer minerals, Idaho, 792
reflectivity values, 1309
mining districts having intrusive aphanites, western U. S., 1626
modal analysis, tonalite, New Mexico, 1247
molybdenum concentration standards, 1234
oil fractions extracted from oil sand, 798
orthoclase, compositional variations, Ariz., 561
Tables—*Continued*
paragenesis, columbite-monazite deposit, Idaho, 1196
ores, Bolivia, 577
lead-zinc, 1087, 1089
quartz-tourmaline percentage in sandstones, Pa., 1299
seleniferous occurrences, Ark., 1553
spectrographic analyses, calc-silicate rocks, Colo., 1417
phosphorites, Phosphoria formation, minor elements, Idaho (abstract), 1333
uraninite, Ariz., 146
stratigraphy, Africa, west equatorial Africa, 1710
Blind River district, Ont., 664
Braden mine area, Chile, 869
East Tintic district, Utah, 1129
Huronian Blind River, Ont., 911
Kolar schist belt, India, 1436
manganese deposits, India, 834
Mesabi district, Minnesota, 1008, 1013
Morococha district, Peru, 964
ore districts, Bolivia, 221, 224
San Juan basin, New Mexico, 433
sulfates, sulfur isotopic ratios, H. Steele mine, New Brunswick, 548
sulfide and sulfate minerals, sulfur isotopic deviations, Sweden, 516
sulfide mill feed composites, 117
sulfides, sulfur, isotopic ratios, 78, 85
sulfides, New Brunswick, 1693
Yellowknife, N. W. T., 1599
x-ray diffraction data, clay minerals, 158
taconites, lithologic types, 568
thorium and uranium in alumina, etc. (communication), 1061
Th:U ratios, bauxites and rocks, 1660
titanium reduction (discussion), 619
x-ray powder patterns, manganese oxides, 301
x-ray study, $AgBiS_2$, 772
soils, Congo, 741
zoning of vein deposits, Ark., 1552
Taconite, 466
Biwabik iron-formation, Minn., 1011, 1012
Taconite from the type locality, Lithologic classification of (Gundersen), 563
Tactites, 1410
Tailings, mill, rhenium content (communication), 609
Takahashi, T., *Supergene alteration of zinc and lead deposits in limestone*, 1083–1115
Talc, 154
Tammann, G., on sulfides, 1206
Tantalite, 733
Tapalpite, 769
Tasmania, cassiterite, inclusions, 492, 494, 504
tin, Aberfoyle mine, temperature of mineralization, 1501

Tauber, J. A., on manganese oxide, 303
Taylor, J. H., on willemite, 844
Teallite, 578, 582
Teas, L. P., on sphalerite, 389
Technique, analyses, bauxites, 1653, 1657
coalified logs, 1040
davidite, 1549
sandstones, Pa., 1297
autoradiographs, siliceous reefs, Mont., 374
coloration of quartz by irradiation, 367
compositional variation study of feldspars, 558
contact printing of drill cores (communication), 1303
contour interpolator (communication), 1555
davidite separation, 1030
determination, metals by field methods (review), 1659
strontium in water, 180
drilling deviation tests, Blind River, Ont. (abstract), 1342
Eh and pH field measurements, 930
electric well logging, Nassau Co., N. Y., 1742
electrode reactions of sulfides, 1207
engineering impingement on geology, 1054
experimental oxidation of metal-salt solutions, 940
freezing points of liquid inclusions (abstract), 1337
gemstone preparation (review), 208
geochemical prospecting for copper, Colo. (abstract), 1329
geophysical prospecting, Garon Lake sulfide district, Que., 342
gravity prospecting, 467
metal deposits (abstract), 1335
lead isotope determinations in galena, 649
manganese oxide ore study, 281
mapping, alteration zones, Mont., 65
East Tintic district, Utah, 1515
subsurface (review), 1317
microteconic methods, Germany (review), 1316
mineral equilibria (review), 622
mineral inclusion examination, 487
mining and preparation of kaolin, Fla., 1383, 1402
molybdenum determination in rocks and soils, 1233
mounting, minute ore samples, 187
niobium analysis, 744
plotter for profiles (communication), 201
porphyrin extraction from bituminous sands, 798
potassium-argon analysis, 1679
prospecting, carbonatites, 737
ores by thermoluminescence (abstract), 1340
Technique—*Continued*
radiochemical determination of uranium migration in sandstone (abstract), 1342
reflectivity measurements of ore minerals (communication), 1306
replacement of calcium by phosphorous, etc. 355
rotation angle determination of ore minerals (abstract), 1335
sampling intrusives for metal abundances, New Mexico, 1246
sedimentary petrology, pre-Simpson deposits, Texas (review), 1075
solubilities of zinc minerals, 1090
spectroscopy of sulfur isotopes, 511
sphalerite separation, 819
study of chalcopyrite blebs in sphalerite, 389
sulfide conversion to SO_2, 1619
sulfur isotope study, 545
analysis, 1679
ratio determinations, 74
synthesis of arsenopyrite, 1355, 1633
system Ag_2S-Bi_2S_3-PbS study, 761
thin section study of rocks (review), 207
thorium-uranium concentration by milling bauxite, 1667
uranium determinations, 375
water analysis for chloride concentration, 1745
water witching, U. S. (review), 1765
x-ray study, carbonatites for niobium, 732
clay minerals, 151
manganese oxides, Nsuta, Ghana, 300
Teixeira, E. A., on syenite, 1656
Telescoped ore deposits, Bolivia, 218, 603
Tellurides, Western Australia, Kalgoorlie deposits, 1461
Tellurium, 1159, 1171, 1468, 1469
geochemistry of tellurium and selenium (review), 1316
system Au-Ag-Te, 1148, 1460
Temiscamie iron-formation, Mistassini Territory, Quebec, Canada, Composition and age of the (Quirke, Goldich, and Krueger), 311
Temperature of formation, arsenopyrite, 1346, 1642, 1643, 1645
clay minerals, 1500
fluorite, 635
siliceous veins, Mont., 70, 380
Temperature of mineralization, clay minerals, etc., 154
galena, 774, 775
H. Steele mine, New Brunswick, 539, 555
Japan, black-ore deposits, 98
Kalgoorlie gold deposit, Western Australia, 1465
logs, Colo. Plateau, 1039
ores, Bolivia, 218, 593, 595, 603
pyrite, Blind River, Ont., 1753
sphalerite, New Brunswick, 818, 820, 825

Temperature of mineralization—*Continued*
sulfides, Johnson Camp, Arizona, 398
southeast Missouri, 98
sulfur isotope variations, Cornwall, England, 519
tin, Aberfoyle mine, Tasmania, 1501
tin-tungsten, Lost River mine, Alaska, 1478, 1499, 1501
Temperatures, hot spring waters, Guatemala, 534
inclusion filling, 485, 487, 490, 504
ore formation, 194
Temperatures in Colorado Plateau sediments, Extractability of humic acid from coalified logs as a guide to (Breger and Chandler), 1039
Tennantite, 889, 896, 897, 901, 1175
Tennessee, Ore deposits and sedimentary features Jefferson City mine (Kendall), 985
manganese oxides, 15
Mascot-Jefferson City zinc district (abstract), 1326
zinc-lead, southern Appalachian district, 1088
Tenney, J. B., on Bisbee area, Ariz., 935
Tenny, R. E., on barium, 632
Tenorite, 890
Tertiary, Bolivia, ore districts, 221
tungsten deposits, Colo.-Wyo., 1408, 1425
Tetradymite, 1172
Tetrahedrite, 366, 580, 600, 890, 1165, 1175, 1464, 1471
Texas, manganese oxides, 27
mining districts having intrusive aphanites, 1627
Paleozoic, pre-Simpson stratigraphy (review), 1074
Textbook, California coastal seas (review), 1317
crystallography (reviews), 620, 850
engineering geology (reviews), 207, 1318
geochemistry, reprinted works of V. I. Vernadskii (review), 1315
geology (reviews), 620, 852, 1766
U.S.S.R. (review), 1760
hydrology (review), 854
meteorology (review), 207
mineral resources (review), 848
mineralogy (reviews), 416, 851, 853
paleogeography, U.S.S.R. (review), 1762
petroleum geology (review), 417
physical geography (review), 1766
selenium and tellurium geochemistry (review), 1316
Textures, colloform, manganese oxide ore, Ghana, 293
sulfide ore, Aachen, West Germany, 525, 526
igneous rocks, 1623
vein quartz, Mont., 370
Thaemlitz, D., analysis by, 269
Thannheiser, G., on niobium determination, 744
Thermoluminescence applied to ore prospecting (abstract), 1340
Thiel, G. H., on manganese oxides, 2
Thode, H. G., Kleerekoper, H., and McElcheran, D. E., on sulfur isotopes, 512
Thode, H. G., Macnamara, J., and Collins, C. B., on sulfur isotopes, 73, 512, 1597
Thode, H. G., Macnamara, J., and Fleming, W. H., on sulfur isotopes, 512, 1597
Thode, H. G., Wanless, R. K., and Wallouch, R., on bacteria, 80
on sulfur isotopes, 512, 1597
Thomas, B. E., on nacrite, 157
Thomas, H. E., review of appendix to book by, 1765
Thompson, J. A., on melonite, 1173
Thompson, J. B., on dehydration curves, 846
Thompson, M. E., on metals, 702
Thompson, R. M., on calaverite, 1474
on telluride minerals, 1149
Thompson, R. M., *et al.*, on synthesis of empressite, 1151
Thomson, D. R. S., discussion by, 1070
Thomson, J. E., on Blind River district, Ont., 663
Thomson, J. E., *et al.*, on the "Grenville," 317
Thorium, occurrence in uraniferous conglomerates (discussion), 411
red mud content (communication), 1060
Thorium, uranium, and zirconium concentrations in bauxite (Adams and Richardson), 1653
Thorium thucholite, 1732, 1733, 1734
Thorne, R. P., on niobium determination, 744
Three Kids manganese mine, Nev., 31, 38
Th:U ratios, bauxites, 1653, 1658
rocks, Blind River area, Ont., 684, 910, 921
sedimentary formations (discussion), 411
thucholite, 1725
Thucolite, 676, 681, 683, 921, 1564
Origin of (Hoekstra and Fuchs), 1716
Thugutt, St. J., on nacrite, 154
Thurlow, E. E., and Reyner, M. L., on Free Enterprise uranium prospect, Mont., 59
Tikholmirov, V. V., review of history by, 1761
Timms, A. B., spectrographic determination by, 1033
Tin, Bolivia, 217
cassiterite inclusions, 485
granites and tin deposits, 1277
statistical year book (review), 1073
U.S.S.R., Kazakstan (review), 852
Tin mine, Alaska, Metallization and post-mineral hypogene argillization, Lost River (Sainsbury), 1478

Titanium, 640
reduction by H_2S in swamp sediments, Md. (discussion), 618
Todorokite, 11
Tokunaga, M., on nacrite, 156
Tolbert, B. M., and Lemmon, R. M., on methane, 1735
Tolman, C. F., and Ambrose, J. W., on Goldfield gold deposit, Nev., 1473
Tooker, E. W., on alteration, 1480
Topaz, 491, 496, 502, 504, 1478, 1484, 1485, 1488, 1491, 1500
Tourmaline, 252, 492, 574, 592, 598, 812, 877, 879, 887, 891, 895, 900, 1298, 1299, 1484, 1500
Tourmalinization, 592
Tournay, M., on niobium determination, 744
Tower, G. W., Jr., and Emmons, S. F., on map, Tintic district, Utah, 1120
Tower, G. W., Jr., and Smith, G. O., on East Tintic district, Utah, 1119, 1512
Trace elements, supergene lead-zinc mineral content, 1112, 1114
Traill, R. J., on brannerite, 680
Transvaal, Witwatersrand, ore deposits in conglomerates, 713
uranium, (discussion), 410
ores (review), 1318
uraninite, distribution (discussion), 842
Trask, P. D., on hausmannite, 23
Travertine, 41
Trefethen, J. M., review of book by, 207
Tremolite, 710
Triassic, Connecticut, north-central Conn., 113
Tridymite, 532
Troilite, sulfur isotope ratios, 1597, 1620
Trümpler, G., on sulfides, 1206
Tube-in-tube apparatus technique, 1356
Tudge, A. P., and Thode, H. G., on isotope exchange reactions, 1689
on partition ratios, 96
on sulfur isotopes, 1597
Tudge, A. P., and Thode, W. G., on sulfur, 512
Tuffs, sulfur isotopes ratios, Yellowknife, N.W.T., 1599, 1601, 1618
Tungomelane, 36
Tungsten, Alaska, Lost River mine, 1478
Colorado, scheelite in gneisses, 1406
Golconda manganese deposits, Nev., 36
manganese oxide content, 28, 42, 44, 48
molybdenum test interference, 1239
Tunnell, G., *et al.*, on telluride minerals, 1149
Tupper, W. M., *Sulfur isotopes and the origin of the sulfide deposits of the Bathurst-Newcastle area of northern New Brunswick*, 1676–1707
Turekian, K. K., and Kulp, J. L., on Sr, 737
Turneaure, F. S., *A comparative study of major ore deposits of central Bolivia*, 217–254, 574–606
on ore types, 1273
on porphyry, Bolivia, 229
Turneaure, F. S., and Gibson, R., on tealite, 582
Turneaure, F. S., and Marvin, T. C., on volcanics, 221
Turneaure, F. S., and Welker, K. K., on zoning, 583
Turner, F. J., on feldspar, 266
Turner, F. J., and Verhoogen, J., on amphibolite, 614
on cordierite, 352
on igneous rocks, 1277
on mineral assemblages, 1460
review of book by, 621
Turquoise, New Mexico (review), 1074
Tuttle, O. F., on feldspar, 64
on "Tuttle press," 1356
Tuttle, O. F., and Bowen, N. L., on orthoclase, 558
Twenhofel, W. H., and Tyler, S. A., on sand sorting, 801
Tweto, O., *Scheelite in the Precambrian gneisses of Colorado*, 1406–1428
Tyler, S. A., on iron silicates, 165
Tyler, S. A., with Bailey, S. W., *Clay minerals associated with the Lake Superior iron ores*, 150
Tyrrell, G. W., on amphibolite, 614
Tyuyamunite, 446

U.S.S.R., alluvial prospecting (review), 1071
Arctic region, Quaternary deposits (review), 1570
bauxites, Urals, Paleozoic deposits, 1289
beryllium deposits (review), 1570
cobalt (review), 1570
diamonds, Siberia (review), 1569
economic geology symposium (review), 1762
emeralds and beryl Izumrud deposit (review), 1571
geology, history 1800–50 (review), 1761
textbooks, (review), 1760
Geology of Ore Deposits (communication), 401
gold, sulfide deposits, oxidation (review), 1761
iron, Ukraine, siliceous formations (review), 852
Lovozero alkali massif (review), 852
mineral resources, Chatkalsk-Kuraminsk Mtns. (review), 849
Mineralogical Society (All-Union), Memoirs of East Siberian Division (review), 1316
oil and gas, geochemical prospecting (review), 1315
ore deposits, metallogenesis (review), 1761

U.S.S.R.—*Continued*
paleogeography, textbook (review), 1762
rhenium in molybdenites (communication), 607
sediments, diagenesis (review), 1571
Siberia, history of geological investigations (review), 852
structure (review), 1570
sulfides, sulfur isotopic ratios, Norilsk, 84, 90
thucholite, 1720
tin, Kazakstan (review), 852
volcanoes, atlas (review), 851
Yakutia, geology (review), 851
Ubisch, H. v., on a mass spectrometer, 512
Uganda, tungsten in sediments, 1424
Uhley, R. P., and Scharon, L., on barite, 632
Ulrich, E. O., on breccias, 986
Ulrich, F., on nacrite, 156
Umpleby, J. B., and Jones, E. L., Jr., on lead ore, Idaho, 646
Underground water, Cedarhurst-Woodmere area, N. Y., 1739
chemistry, 950
East Tintic district, Burgin shaft, Utah, 1524
"metamorphic water," 807
sulfur isotopes, Yellowknife, N.W.T., 1611, 1612
uranium deposition and transport, Blind River, Ont., 1754
Utah, uranium-vanadium deposition, Lisbon Valley (abstract), 1339
Wisconsin, Potosi area, pH values, 1098
witching for water, U. S. (review), 1765
Union South Africa, lithiophorite, Postmasburg, 299
thucholite, 1720
United Kingdom, nonferrous mining (review), 854
United States, manganese oxide deposits, 4, 45
mining districts, western U. S., 1624
water witching (review), 1765
Unmixing, silver minerals from galena, 759, 779
Uraninite, 56, 57, 366, 380, 412, 446, 680, 683, 689, 919, 924, 1561, 1724, 1725, 1732, 1754
Witwatersrand (review), 1318
distribution (discussion), 842
Uraninite grains in the Shinarump member of the Chinle formation in northern Arizona, Detrital-appearing (Petersen), 138
Uranium, Blind River area, Ontario, 718
Colorado Plateau deposits, 720
sulfides, sulfur isotopic ratios, 91
conglomerate deposits (discussion), 410
log deposits, Colo. Plateau, 1039
Uranium—*Continued*
Ontario, Blind River conglomerate deposits (discussion), 1561
drill-hole deviation (abstract), 1341
Pronto deposit (abstract), 1332
ore deposits, non-Russian countries (review), 1316
red mud content (communication), 1060
replacement of calcium and phosphorous, 358
sandstone deposits, determination of age of migration (abstract), 1342
Saskatchewan, Beaverlodge area, structural history (discussion), 617
sedimentary rock deposits (review), 1074
sulfur isotopes in uranium deposits (abstract), 1329
sandstone deposits, 1687
thucholite, Besner mine, Ont., 1716
Utah, Lisbon valley region, 936
Silver Reef ores, genesis (communication), 835, 837
Temple Mtn. asphaltite-rich deposit (abstract), 1339
vanadium-uranium, Lisbon valley deposits, origin (abstract), 1339
vein deposits, Congo-Rhodesian copper belt, 707
Witwatersrand, conglomerate deposits, 713
Wyoming, sandstone deposits, age and migration (abstract), 1332
Uranium, and zirconium concentrations in bauxite, Thorium (Adams and Richardson), 1653
Uranium deposits, Evidence of the origin of the Blind River (Derry), 906
Uranium deposits of the southern part of the San Juan basin, New Mexico (Hilpert and Moench), 429
Uranium ores and their origin, Blind River (Robertson and Steenland), 659
Comments regarding the Blind River (Algoma) (Joubin), 1751
Uranium thucholite, 1732, 1733, 1734
Uranium-bearing "siliceous reef" veins in the Boulder batholith, Montana, Primary mineralization of (Wright and Bieler), 56, 363
Uranothorite, 921
Urey, H. C., on partition ratios, 96
Urey, H. C., Lowenstam, H. A., and Epstein, S., on carbonate-water O^{18} equilibrium, 96
Ussher, W. A. E., Barrow, G., and McAlister, D. A., on argillization, 1479
Utah, Chief Oxide-Burgin area discoveries, East Tintic district; A case history, Part I (Lovering and Morris), 1116; Part II (Bush and Cook), 1507
alteration, North Tintic district (abstract), 1341
coal, chemical analysis, 1041

Utah—Continued
Continental No. 1 mine, sulfide oxidation study, 934, 936
manganese oxides, 19, 40, 42
mining districts, 1626
ore deposits, Tintic mining district (review), 1762
silver, Silver Reef, genesis (communication), 835
sulfides, mill feed sample, 117
thucholite, 1720
uranium, Temple Mtn. asphaltite-rich deposit, origin (abstract), 1339
uranium-vanadium, Lisbon valley deposits, origin (abstract), 1339

Väyrynen, H., review of a translation of a book by, 1315
Vanadium, Alum shale deposits, Sweden, 702, 703
porphyrin-vanadium complex, 800
San Juan basin, New Mexico, 446
South West Africa, Berg Aukas mine (discussion), 845
trace element in supergene minerals of V, 1112
Utah, uranium-vanadium, Lisbon valley deposits, origin (abstract), 1339
van Bemmelen, R. W., on granites, 1282
Van den Heurk, J., on "cold seal" pressure apparatus, 1356
Van Hise, C. R., and Leith, C. K., on iron ores, 150
Van Hook, H. J., *The ternary system Ag_2S-Bi_2S_3-PbS*, 759–788
Van Pelt, J. R., with Neilson, J. M., and Snelgrove, A. K., *Curricular and professional aspects of geological engineering*, 1048
Van Siclen, D. C., on a transgressing sea, 668
Van Wambeke, L., *Geochemical prospecting and appraisal of niobium-bearing carbonatites by x-ray methods*, 732–758
on alteration, 733
Vatukoula gold-telluride deposit, Fiji, 1465
Veinlets, manganese oxides, Nsuta, Ghana, 289
Veins, asbestos, Cassiar deposit, Brit. Columbia, 333
Bolivia, 217, 235, 249, 583, 585, 594, 599
Braden copper district, Chile, 878
gold, Kolar district, India, 1430, 1435, 1441, 1446, 1449, 1455
Morococha district, Peru, 969, 973, 976
OH vein, mineralogy, Creede, Colo. (abstract), 1336
quartz, Blind River district, Ont., 662, 673
Yellowknife district, N.W.T., 1594, 1596, 1613
scheelite, Salida area, Colo., 1421
Veins—*Continued*
sulfides, Africa, lower Congo region, 1714
tin deposits, 486, 491
Veins in the Boulder batholith, Montana, Primary mineralization of uranium-bearing "siliceous reef" (Wright and Bieler), 56, 363
Vermilion iron range, Minn., clay minerals with ores, 175
Vernadsky, W., on thucholites, 1721
review of selected reprinted books by, 1315
Vernon, R. O., on Ocala arch, Florida, 1398
Vernon, R. O., and Puri, H. S., on Ocala group, Florida, 1387
Verwoerd, W. J., on willemite, 844
Vesuvianite, 1417
Vickers, R. C., on thoriferous sediments, Ont., 674
on urania in monazite, Ont., 1561
Vinal, G. W., on gamma MnO_2, 300
Vinodgradov, A. P., on iron, 1289
review of books edited by, 1315
Vinogradov, A. P., Chupakhin, M. S., and Grinenko, U. A., on sulfur, 74
Virginia, copper, Catoctin formation mineralization (abstract), 1325
manganese oxides, 13, 14
zinc-lead, southern Appalachian district, 1088
Viswanath, S. N., on schists, India, 1433
Viterbite, 891
Vlasov, K. A., and Kutukova, E. I., review of book by, 1571
Vlasov, K. A., Kuzmenko, M. V., and Eskova, E. M., review of book by, 852
Vogt, E. Z., and Hyman, R., review of book by, 1765
Vogt, J. H. L., on copper sulfide deposits, Norway, 1275
on greisen, 1485
on sulfides, 1205
Volcanic tin deposits, Bolivia, 486, 493, 499
Volcanics, Bolivia, ore districts, 221, 590
Braden copper area, Chile, 872
H. Steele mine area, New Brunswick, 542
Volcanism, Braden copper district, Chile, 900
Volcanoes, U.S.S.R., atlas (review), 851
Volodchenkova, A. I., and Melentiev, B. N., on apatite, 355
Vugs, 977, 981, 985, 989, 990, 993, 994, 1332, 1471, 1516, 1753

Vyayuryunen, Kh. (H.), review of a translation of a book by, 1315

W. Wilson uranium mine, Mont., 60
Wad, 10, 284
Wada, S., and Seki, Y., on sulfides, 1206
Wager, L. R., and Deer, W. A., on Skaergaard intrusion, Greenland, 271

Wager, L. R., Vincent, E. A., and Smales, A. A., on sulfides, 134
Wagner, C., on Ag_2S crystals, 1222
Wahl, W. G., on Mistassini district, Quebec, 312
Wahlstrom, E. E., on bismuth, 761
on igneous rocks, 1247
Waite, C. E., on stibnite, 1551
Waldemar Lindgren—and Economic Geology (Bateman), i
Waldschmidt, W. A., on galena, 655
Walker, E. S., Cuttitta, F., and Senftle, F. E., on copper isotopes, 404
Walker, T. L., on khondalites, 829
Walpole, B. P., reply to a discussion by, 615
Wang, Y. T., on sulfides, 1204
Wanless, R. K., and Leach, G. B., on lead isotopes, 654
Wanless, R. K., and Thode, H. G., on the mass spectrometer, 1598
Wanless R. K., Boyle, R. W., and Lowdon, J. A., *Sulfur isotope investigation of the gold-quartz deposits of the Yellowknife district*, 1591–1621
Ward, F. N., on molybdenum, 1232
Ward, F. N., and Marranzino, A. P., on niobium determination, 744
Ward, H., discussion of article by, 1070
Washington, mining districts, 1626
Wasserstein, B., on pyrite, 1355
Watanabe, M., on tellurides, Japan, 1473
Water, acidity of Lake Ixpaco water, Guatemala, 536
arsenopyrite reaction effects, 1643
Eh-pH measurement of mine waters, 933, 934
fluorine content, 636
metal migration in waters (review), 1568
occurrence in inclusions, 495
sulfate in mine water, sulfur isotopic deviations, Sweden, 516
sulfates, sulfur isotopes, Yellowknife district, N.W.T., 1598, 1610
thermal waters, sulfur isotopes, New Zealand, 1688
Th:U ratios, 1661
Water witching, United States (review), 1765
Waters of Champaign County, Ohio, Occurrence of strontium in the surface and ground (Feulner and Hubble), 176
Watson, K. D., on lamprophyre, 346
Wavellite, 577, 582
Weathering, alteration, heavy minerals (discussion), 1759
altered areas, East Tintic district, Utah, 1136
bauxitic parent rocks, 1661, 1665
Boulder batholith, Mont., 65
Eh-pH of weathering environment, 952, 954
Weathering—*Continued*
feldspar sand, Florida, 1393
Lost River tin mine, Alaska, 1497
manganese ores, Nsuta, Ghana, 290
zinc-lead southern Appalachian district, 1088
Weaver, C. E., on muscovite, 155
Wedepohl, K. H., on zinc, 1256
Weed, W. H., on Boulder batholith, Mont., 58
Weed, W. H., and Barrell, J., on Boulder batholith, Mont., 58
Weeks, A. D., and Garrels, R. M., on sediments, Colo. Plateau, 1046
Weeks, L. J., on geology, northern New Brunswick, 820
Weissite, 1169, 1174
Wells, R. C., on sulfides, 1206
Wells, water, Champaign Co., Ohio, 177, 181
Connecticut, north-central Conn., 109
location by divination (review), 1765
Nassau Co., N. Y., 1740, 1741
Wendt, A., on Canteria formation, Bolivia, 222
Wentorf, R. H., Jr., on garnet, 257
Wernick, J. H., on solubility of $AgBiS_2$ in galena, 777
West, E. D., on sulfur, 1352
West, J. R., on sulfur vapor pressure, 1367
West, W. A., and Menzies, A. W. C., on sulfur vapor pressure, 1367
West Germany, Aachen sulfide district, sulfur isotopes, 525
Westergard, A. H., on metals, 702
Westerveld, J., on acid rocks, 1277
White, C. H., on oxidation products, 1204
on sands, 705
White, D. A., on Biwabik formation, Minn., 1005
on taconites, 564
White, D. E., on alunite, 155
on boron-chloride ratio, 633
on greisen, 1485
on manganese oxides, 41
White, H. M., on The Champion Reef mine, India, 1433
White, K. E., analyses by, 1492
White, W. S., discussion by, 402
White, W. S., and Denson, N. M., on kaolinite, 1656
White, W. S., and Wright, J. C., reply to a discussion of an article by, 402
Whitehead, W. M., review of book by, 620
Whitmore, D. R. E., Berry, L. G., and Hawley, J. E., on chrome micas, 155
Whittaker, E. J. W., and Zussman, J., on Al-lizardite, 159
Whitten, C. A., and Drummond, K. H., review of monograph by, 208
Whittle, A. W. G., on davidite, 1030, 1541
Wiebols, J. H., on Rand conglomerate, 699

Wiik, H. B., and Väänänen, P., analysis by, 1634
determinations by, 1367
Willemite, 1087, 1095, 1099
Willemite-hemimorphite relationship (discussion), 844
Williams, E. G., *Relationship between the stratigraphy and petrography of Pottsville sandstones and the occurrence of high-alumina Mercer clay*, 1291–1302
Williams, E. G., and Nickelsen, R. P., on Mercer coal correlation, Pa., 1291
Williams, F. A., *et al.*, on granites, 733
Williams, H., Turner, F. J., and Gilbert, C. M., on amphibolite, 614
Willis, L. G., on Eh of soils, 930
Wilson, A. D., on iron, 1031
Wilson, H. D. B., on ore groups, 1275
Wilson, H. D. B., and Brisbin, W. C., abstract by, 1327
Wilson, I. F., and Rocha, V. S., on manganese oxides, 28
Wilson, I. F., and Veytia, M., on manganese oxide, 37
Wilson, J. T., Russell, R. D., and Farquhar, R. M., on lead, 1703
Wilson, M. E., on granite, 347
Winchell, A. N., on sulfides, 1205
Winchell, H., reviews by, 620, 850
Winchell, H. V., on taconyte, 565
Winchell, N. H., and Winchell, H. V., on iron formations, 565
Winkelmann, D., on oxygen, 947
Wisconsin, Eh-pH measurements of lake sediments, 939
galena, oxidation electrode potential, 1218
lead-zinc, Upper Miss. Valley district, 1087
taconite, density determinations, 468
Wiseman, J. D. H., on epidiorites, 1433
Wisler, C. O., and Grater, E. F., review of book by, 854
Wisser, E. H., and Turner, M. D., on clays, Calif., 635
Witwatersrand, Blind River, Ont., and Rand conglomerates compared, 688
gold, origin, 198
Witwatersrand, gold-uranium ores (review), 1074
ore deposits in conglomerates, 713
ores and their origin (review), 1318
uranium, conglomerate deposits (discussion), 410
Wolff, J. F., on Biwabik formation, Minn., 1007
Wolframite, 491, 580
Wollastonite, 1418
Wood, H. B., on uranium, 1039
Woodring, W. P., and Davies, S. N., on manganese oxide, 37
Woodrow uranium mine, New Mexico, 456
Woodruffite, 13
Woollard, G. P., and Hanson, G. F., on gravity surveys, 466
Wrabetz, K. E., on sulfides, 1206
Wright, H. D., and Bieler, B. H., *Primary mineralization of uranium-bearing "siliceous reef" veins in the Boulder batholith, Montana*, 56–72, 363–382
Wright, H. D., and Emerson, D. O., on Lone Eagle mine, Mont., 57
Wright, H. D., and Shulhof, W. P., on Lone Eagle mine, Mont., 57
Wright, —, analysis by, 1166
Wulfenite, 1087, 1107, 1108, 1114
Wylie, A. W., on cerium, 1547
Wyllie, P. J., and Tuttle, O. F., on synthetic carbonatite magma, 1200
Wyman, R. V., communication by, 835
Wyoming, manganese oxides, 20
scheelite, 1407, 1408, 1422
uranium, Hulett Creek area, age and migration of deposits (abstract), 1332

X-ray methods, Geochemical prospecting and appraisal of niobium-bearing carbonatites by (Van Wambeke), 732
X-ray study, $AgBiS_2$, 772
arizonite, 1069; (discussion), 1065
arsenopyrite, 1354, 1357, 1637
bauxite, Portilla de Luna, Spain, 1285
chlorite-montmorillonite interstratifications, 163
clay minerals, Alaska, 1489
Lake Superior iron ores, 151
davidite, 1542
feldspars, Ariz., 557, 558
ilmenite alteration products (discussion), 844
kaolin, Florida, 1390
manganese oxides, Nsuta, Ghana, 300
niobium content of minerals, 739, 744
pyrite, 1351
serpentine, 157
sphalerite, 1644
system Ag_2S-Bi_2S_3-PbS, 764
thucolite, Ont., 681, 1729
uraninite, 367

Yellowknife district, Sulfur isotope investigation of the gold-quartz deposits of the (Wanless, Boyle, and Lowdon), 1591
Yoder, H. S., on talc, 154
Yoder, H. S., and Eugster, H. P., on muscovite, 67, 155
Yoshimura, T., on todorokite, 11
Yttria, occurrence in davidite, 1033, 1034
Yttrium, Arkansas, Bellah mine (communication), 1554
Yugoslavia, bauxite, potassium content, 1671
Yukon Territory, sulfides, mill feed sample, 118

Zernike, J., on chemical phases, 766
Zhilinskii, G. B., review of monograph by, 852
Zhirov, K. K., and Ivanova, G. F., on rhenium, 607
Ziauddin, M., with Narayanaswami, S., and Ramachandra, A. V., *Structural control and localization of gold-bearing lodes, Kolar gold field, India*, 1429
Zies, E. G., Allen, E. T., and Merwin, H. E., on sulfides, 1205
Zinc, acid rocks and zinc deposits, 1280
  Arizona, Johnson Camp, 387
  England, Pennine area (discussion), 205
  New Mexico, distribution in intrusives, 1254, 1261, 1265
  Quebec, Mattagami area (abstract), 1326
  Tennessee, Mascot-Jefferson City district, structure (abstract), 1326
  Utah, East Tintic district, 1134, 1509, 1522
    Burgin mine, 1535
    jasperoid deposits, 1516
  willemite-hemimorphite relationships (discussion), 844
Zinc, lead, and sulfur contents of some North American base-metal sulfide ores, Nickel, cobalt, copper (Kilburn), 115
Zinc and lead deposits in limestone, Supergene alteration of (Takahashi), 1083
Zinc deposit at Garon Lake, Quebec, The discovery of a copper (Joklik), 338
Zinc hydroxide, solubility, 1093, 1097
Zinkenite, 581
Zinner, P., Holmberg, C. L., and Terry, O. W., on gravity prospecting, 466
Zircon, 732, 735, 921
Zirconium concentrations in bauxite, Thorium, uranium, and (Adams and Richardson), 1653
Znamenskii, E. B., on niobium, 733
ZoBell, C. E., on Eh of sediments, 930
Zoisite, 1417
Zones, alteration, East Tintic district, Utah, 1135
  pegmatites, 639
Zoning, alteration, Boulder batholith, Mont., 57, 65
  Tintic district, Utah (abstract), 1341
  Arkansas, vein deposits (communication), 1551
  Braden copper district, Chile, 896
  Coeur d'Alene district, Idaho, 648
  Colorado, Central City ore district (abstract), 1328
  columbite-monazite deposit, Idaho, 1198
  copper ores, Congo-Rhodesian deposits, 711
  East Tintic district, Utah, 1511
  manganese ores, U. S., 6
  manganese oxide minerals, 49
  Morococha district, Peru, 976
  North Pennine area, England (discussion), 205
  Northern Rhodesia, copperbelt, 812, 814
  OH vein, mineralogy, Creede, Colo. (abstract), 1336
  ore deposits, Bolivia, 586, 589, 599
  origin, differential crystallization, 1281
  pegmatites, 638
  Silver Reef area, Utah (communication), 837
  sulfur control of mineral assemblages, Colo. (abstract), 1336
  sulfur isotope variations, 514, 516, 528
  syngenetic mineral deposits, 729
  tin and tin-silver ore deposits, Bolivia, 583, 586
  uranium-thorium, Blind River, Ont. (discussion), 412
  White Pine district, Mich. (discussion), 408
Zussman, J., and Brindley, G. W., on serpentine, 158

ECONOMIC GEOLOGY

AND THE

BULLETIN OF THE SOCIETY OF ECONOMIC GEOLOGISTS

EDITOR: ALAN MARA BATEMAN
Yale University, New Haven, Connecticut

BUSINESS EDITOR: MORRIS M. LEIGHTON
Illinois Geological Survey, Urbana, Illinois

ASSISTANT EDITORS

H. E. MCKINSTRY, *Harvard University*
M. LEROY JENSEN, *Yale University*
JOE W. PEOPLES, *Wesleyan University*
J. D. BATEMAN, Toronto, Ont.
R. H. JAHNS, *Pennsylvania State University, University Park*

ASSOCIATE EDITORS

D. F. HEWETT
U. S. Geological Survey, Menlo Park, Calif.

A. I. LEVORSEN
Tulsa, Okla.

J. E. HAWLEY
Queen's University, Kingston, Ontario

W. E. WRATHER
Washington, D. C.

A. N. SAYRE
U. S. Geological Survey, Washington, D. C.

L. C. GRATON
Orange, Connecticut

E. S. MOORE
University of Toronto, Toronto, Can.

GEORGE W. MOREY
U. S. Geological Survey, Washington, D. C.

N. H. FISHER
Bureau of Mineral Resources Canberra, Australia

PER GEIJER
Djursholm, Sweden

P. F. FOURMARIER
Liège University, Liège, Belgium

M. S. KRISHNAN
Andhra University, Waltair, India

T. W. GEVERS
University of the Witwatersrand, Johannesburg, S. Africa

C. F. DAVIDSON
St. Andrews University, Fife, Scotland

J. A. BROGGI
Instituto Geologica, Lima, Peru

TAKEO WATANABE
University of Tokyo, Tokyo, Japan

KONRAD B. KRAUSKOPF
Stanford University, California

PAUL RAMDOHR
University of Heidelberg, Heidelberg, Germany

VOLUME 55

NEW HAVEN, CONNECTICUT
THE ECONOMIC GEOLOGY PUBLISHING COMPANY
1960

SOCIETY OF ECONOMIC GEOLOGISTS

THE PUBLICATIONS OF WHICH CONSTITUTE
A PART OF THIS JOURNAL

OFFICERS FOR 1960

DUNCAN R. DERRY, *President*
CHARLES F. PARK, *Vice President*

PHILIP J. SHENON, *President-Elect*
JOHN K. GUSTAFSON,
Vice President-Elect

HAROLD M. BANNERMAN, *Secretary*, U. S. Geological Survey, Washington 25, D. C.

JOSEPH T. SINGEWALD, JR., *Treasurer*, Johns Hopkins University, Baltimore 18, Maryland

Councilors

1960	*1961*	*1962*
PHILIP W. CHASE	VINCENT D. PERRY	S. WARREN HOBBS
ROBERT M. GARRELS	STANLEY DAVIDSON	LYMAN H. HART
EDWARD H. WISSER	DESMOND F. KIDD	VINCENT C. KELLEY

Regional Vice Presidents

A. PAUL GERHARD SOHNGE, Africa.....KINGSLEY CHARLES DUNHAM, Europe
LUIS SANTOS-YÑIGO, Asia.....J. RUBEN VELASCO, North America
HADDON F. KING, Australia.....ALBERTO BENAVIDES Q., South America

Executive Committee

DUNCAN R. DERBY, *Chmn.* — JOSEPH L. GILLSON — HAROLD M. BANNERMAN
CHARLES F. PARK — PHILIP J. SHENON — JOSEPH T. SINGEWALD, JR.

Standing Committees for 1960–61

Finance Committee

JOSEPH T. SINGEWALD, JR., *Chairman* — OLAF N. ROVE — J. K. GUSTAFSON

Program Policy Committee

CHARLES A. ANDERSON, *Chairman* — CHARLES F. PARK, JR. — J. K. GUSTAFSON
J. P. POLLOCK — WESTON BOURRET

Program Committee

M. L. JENSEN, *Chairman* — PAUL AVERITT — F. G. SNYDER
JAMES P. POLLOCK — H. E. HAWKES, JR. — H. M. BANNERMAN, *ex officio*

Committee on Publications

DUNCAN R. DERRY, *Chairman* — CHARLES A. ANDERSON — R. H. JAHNS

Nominating Committee

D. F. KIDD, *Chairman* — JAMES BOYD — CARL TOLMAN

Admissions Committee

J. E. THOMSON, *Chairman* — J. C. FRYE — R. B. FULTON, III
CHARLES F. PARK, JR. — ROBERT M. GARRELS

Auditing Committee

A. N. SAYRE, *Chairman* — THOR KIILSGAARD

CONTENTS OF VOLUME 55

Number 1

Foreword—Waldemar Lindgren and *Economic Geology*.....*The Editor* i

Preface—Centenary of Waldemar Lindgren.....*M. L. Jensen*

Deposits of the Manganese Oxides.....*D. F. Hewett and Michael Fleischer* 1
Primary Mineralization of Uranium-Bearing "Siliceous Reef" Veins in the Boulder Batholith, Montana.....*B. H. Bieler and H. D. Wright* 56
Sulfur Isotopes and Ore Deposits.....*W. U. Ault and J. L. Kulp* 73
Ground Water in North-Central Connecticut.....*R. V. Cushman* 101
Nickel, Cobalt, Copper, Zinc, Lead and Sulfur Contents of Some North American Base-Metal Sulfide Ores.....*L. C. Kilburn* 115
Detrital-Appearing Uraninite Grains in the Shinarump Member of the Chinle Formation in Northern Arizona.....*R. G. Petersen* 138
Clay Minerals Associated With the Lake Superior Iron Ores
S. W. Bailey and S. A. Tyler 150
Occurrence of Strontium in the Surface and Ground Waters of Champaign County, Ohio.....*A. J. Feulner and J. H. Hubble* 176
A Method of Mounting Minute Particulate Samples of Opaque Ore Minerals for Quantitative Microscopic Analysis.....*Lee Dillinger and C. B. Sclar* 187

Editorial—If Lindgren Were Here.....*L. C. Graton* 192

Scientific Communications:
A Geologic-Profile Plotter.....*O. T. Marsh* 201

Discussions:
Some Considerations in Determining the Origin of Ore Deposits of the Mississippi Valley Type.....*G. A. Schnellmann* 205
Sulfur Isotopes and Hydrothermal Mineral Deposits.....*J. W. T. Spinks* 206

Reviews:
The Study of Rocks in Thin Section (W. W. Moorhouse)..... 207
Geology for Engineers, 2nd Ed. (J. M. Trefethen)..... 207
Everyday Meteorology (A. A. Miller and M. Parry)..... 207
Edelsteine und Perlen (K. Schlossmacher)..... 208
Contemporary Geodesy (C. A. Whitten and K. H. Drummond, Eds.)..... 208
Anglo-America: A Regional Geography (E. B. Shaw)..... 209
Books Received.....*Cyrus W. Field and John E. Cotton* 209

Scientific Notes and News..... 215

Number 2

A Comparative Study of Major Ore Deposits of Central Bolivia. Part 1
F. S. Turneaure 217
Genesis of the Gore Mountain Garnet Deposit, New York.....*P. Bartholomé* 255

Manganese Oxides and Associated Minerals of the Nsuta Manganese Deposits, Ghana, West Africa.....*R. K. Sorem and E. N. Cameron* 278
Composition and Age of the Temiscamie Iron-Formation, Mistassini Territory, Quebec, Canada.....*T. T. Quirke, Jr., S. S. Goldich, and H. W. Krueger* 311
The Genesis of Chrysotile Asbestos in the Cassiar Asbestos Deposit, Northern British Columbia.....*Hubert Gabrielse* 327
The Discovery of A Copper-Zinc Deposit at Garon Lake, Quebec.....*G. F. Joklik* 338
Some Cation Substitutions During the Formation of Phosphorite from Calcite *L. L. Ames, Jr.* 354
Primary Mineralization of Uranium-Bearing "Siliceous Reef" Veins in the Boulder Batholith, Montana: Part II—The Veins.....*B. H. Bieler and H. D. Wright* 363
Rejuvenation of Pitchblende in Hercynian Ore Deposits.....*C. F. Davidson* 383
Chalcopyrite Blebs in Sphalerite at Johnson Camp, Arizona.....*Arthur Baker III* 387

Scientific Communications:
Commercial Chrysotile Deposits, Baie Verte, Notre Dame Bay District, Newfoundland—Preliminary Notes.....*W. James Bichan* 399
Supplement to Vademecum of the Russian Geological Periodicals *Eugene A. Alexandrov* 401

Discussions:
The White Pine Copper Deposit.....*Walter S. White* 402
Huronian Uraniferous Conglomerates.....*Stuart M. Roscoe* 410

Reviews:
New Zealand Coals, Their Geological Setting and Its Influence on Their Properties (R. P. Suggate).....*Gilbert Cady* 415
Dana's Manual of Mineralogy, 17th Edit..... 416
Petroleum Geology, 2nd Edit. (K. K. Landes)..... 417
Structural Methods for the Exploration Geologist (P. C. Bagley)..... 417
Rock to Riches (C. H. Dunning and E. H. Peplow, Jr.)..... 418
Books Received.....*John E. Cotton and Cyrus W. Field* 418

Scientific Notes and News..... 426

Number 3

Uranium Deposits of the Southern Part of the San Juan Basin, New Mexico *L. S. Hilpert and R. H. Moench* 429
Application of the Gravity Method to Iron Ore Exploration.....*W. J. Hinze* 465
Inclusions in Cassiterite and Associated Minerals.....*W. M. Little* 485
Sulfur Isotope Fractionation in Sulfide Mineralization *S. Gavelin, A. Parwel, and R. Ryhage* 510
A Sulfur Mud Deposit Formed Through Bacterial Transformation of Fumarolic Hydrogen Sulfide.....*Pontus Ljunggren* 531
Geology, Sulfur Isotopes and the Origin of the Health Steele Ore Deposits, Newcastle, N.B., Canada.....*E. DeChow* 539
Compositional Variation of Alkali Feldspars in Some Intrusive Rocks Near Globe-Miami, Arizona.....*F. J. Kuellmer* 557
Lithologic Classification of Taconite from the Type Locality.....*J. N. Gundersen* 563
A Comparative Study of Major Ore Deposits of Central Bolivia. Part II *F. S. Turneaure* 574

Scientific Communications:
The Geochemistry of Rhenium—Addendum.....*Michael Fleischer* 607

Discussions:

Monazite-Bearing Pegmatites in the South Georgia Piedmont....*V. J. Hurst* 610
Monazite-Bearing Pegmatites in the South Georgia Piedmont—A Reply
C. W. Fortson, Jr. and A. T. Navarre 613
The Source Bed Concept....*B. P. Walpole* 615
Structural History of the Beaverlodge Area....*J. A. Chamberlain* 617
Ilmenite Alteration Under Reducing Conditions in Unconsolidated Sediments
Dorothy Carroll 618

Reviews:

Boston, A Topographical History (W. M. Whitehead)....*H. E. McKinstry* 620
General Crystallography: A Brief Compendium (W. F. DeJong)..*H. Winchell* 620
Principles of Geology (G. W. Bain).... 620
Physics and Geology (Jacobs, Russel and Wilson).... 621
Igneous and Metamorphic Geology, 2nd Edit. (Turner and Verhoogen).... 621
Mineral Equilibria, at Low Temperature and Pressure (R. M. Garrels).... 622
Books Received....*John E. Cotton and Cyrus W. Field* 622

Scientific Notes and News.... 628

Number 4

Intriguing Examples of Geology Applied to Industrial Minerals...*Joseph L. Gillson* 629
Isotopic Composition of Lead and Precambrian Mineralization of the Coeur D'Alene District, Idaho....*A. Long, A. J. Silverman, and J. L. Kulp* 645
The Blind River Uranium Ores and Their Origin
D. S. Robertson and N. C. Steenland 659
Patterns to Ores in Layered Rocks....*George W. Bain* 695
Geochemical Prospecting and Appraisal of Niobium-Bearing Carbonatites by X-Ray Methods....*L. Van Wambeke* 732
The Ternary System Ag_2S-Bi_2S_3-PbS....*H. J. Van Hook* 759
Nature and Origin of Central Idaho Blacksands....*C. N. Savage* 789
A Geochemical Investigation of the Athabasca Bituminous Sands
J. B. F. Champlin and H. N. Dunning 797
Critical Remarks on the Genesis of Ore As Applied to Future Mineral Exploration
Reno H. Sales 805
Application of the Sphalerite Geothermometer to Some Northern New Brunswick Sulfide Deposits....*David Benson* 818
Structure and Stratigraphy of the Manganese Deposits of Visakhapatnam and Srikakulam Districts, India....*J. S. R. Krishna Rao* 827

Scientific Communications:

Comments Regarding Ore Genesis at Silver Reef, Utah....*Richard V. Wyman* 835

Discussions:

Some Geochemical Considerations on Lead-Isotope Dating of Lead Deposits
R. W. Boyle 840
Anomalous Leads and the Emplacement of Lead Sulfide Ores—Erratum
R. L. Stanton and R. D. Russell 841
Distribution of Witwatersrand Uraninite....*A. O. Fuller* 842
Alteration of Ilmenite and "Arizonite"....*M. D. Karkhanavala* 843
The Willemite-Hemimorphite Relationship....*N. L. Markham* 844

Reviews:

Our Mineral Resources (C. M. Riley) ..... *Hugh McKinstry* 848
Osnovnye Cherty Magmatizma i Metallogenii Chatkalo-Kuraminskikh Gor *C. F. Davidson* 849
Soupis periodik geologických věd ..... *C. F. Davidson* 849
Cours de Cristallographie, Vol. II, Cristallographie physico-chimique. (R. Gay) *H. Winchell* 850
Short Reviews of New Russian Books ..... *C. F. Davidson* 850
Industrial Minerals and Rocks, 3rd Edit. 853
Principles of Mineralogy (W. H. Dennen) 853
The Future of Non-Ferrous Mining in Great Britain and Ireland—A Symposium 854
Hydrology, 2nd Edit. (C. O. Wisler and E. F. Brater) 854
Books Received ..... *Roger L. Ames and John E. Cotton* 855

Scientific Notes and News 861

Number 5

Geology of the Braden Orebody, Chile, South America *F. H. Howell and J. S. Molloy* 863
Evidence of the Origin of the Blind River Uranium Deposits ..... *Duncan R. Derry* 906
Oxidation of Sulfide Ore Bodies. 1. Geochemical Environments in Terms of Eh and pH ..... *Motoaki Sato* 928
Ore Controls in the Morococha District, Peru ..... *R. H. Nagell* 962
Ore Deposits and Sedimentary Features Jefferson City Mine, Tennessee *David L. Kendall* 985
Stratigraphy of the Eastern Mesabi District, Minnesota ..... *James N. Gundersen* 1004
The Constitution of Davidite ..... *J. D. Hayton* 1030
Extractability of Humic Acid from Coalified Logs As A Guide to Temperatures in Colorado Plateau Sediments ..... *I. A. Breger and J. C. Chandler* 1039
Curricular and Professional Aspects of Geological Engineering *J. M. Neilson, A. K. Snelgrove and J. R. Van Pelt* 1048

Scientific Communication:

Radioactivity of Aluminum Metal ..... *J. A. S. Adams and K. A. Richardson* 1060

Discussions:

Alteration of Ilmenite ..... *Langtry E. Lynd* 1064
Malayan Ilmenite vs. Arizonite ..... *B. H. Flinter* 1068
Sulfide Orebodies at Yauricocha, Peru ..... *D. R. S. Thomson* 1070

Reviews:

Shlikhovaya S'emka i Analiz Shlikhov (Ozerov) ..... *C. F. Davidson* 1071
Beaches and Coasts (C. A. M. King) ..... *W. Harrison* 1071
Geological Nomenclature (1959) (A. A. G. Schieferdecker) ..... *G. C. Amstutz* 1072
International Tin Council Statistical Year Book, 1959 1073
Gemstones of North America (J. Sinkankas) 1073
Minerals of New Mexico, 2nd Edition (S. A. Northrop) 1073
Die Uran-und Goldlagerstätten-Witwatersrand-Blind River-Dominion Reef-Serra de Jacobina: Erzmikroskopische Untersuchungen und ein Geologischer Vergleich (P. Ramdohr) 1074

Stratigraphy of the Pre-Simpson Paleozoic Subsurface Rocks of Texas and Southeast New Mexico (V. E. Barnes) 1074
Books Received ..... *John E. Cotton and Roger L. Ames* 1075

Scientific Notes and News 1081

Number 6

Supergene Alteration of Zinc and Lead Deposits in Limestone ..... *Taro Takahashi* 1083
The Chief Oxide-Burgin Area Discoveries, East Tintic District, Utah; A Case History. Pt. I. U. S. Geological Survey Studies and Exploration *T. S. Lovering and H. T. Morris* 1116
Synthetic and Natural Phases in the System Au-Ag-Te. Pt. I ..... *N. L. Markham* 1148
Genetic Aspects of the Monazite and Columbium-Bearing Rutile Deposits in Northern Lemhi County, Idaho ..... *Alfred L. Anderson* 1179
Oxidation of Sulfide Ore Bodies. II. Oxidation Mechanisms of Sulfide Minerals at 25° C ..... *Motoaki Sato* 1202
A New Geochemical Method for the Determination of Molybdenum in Soil and Rock *J. Kent Perry* 1232
Intrusion and Ore Deposition in New Mexico ..... *Charles Banks Belt, Jr.* 1244
Residual Characteristics of Crystallates Genetically Associated with Ore Deposits *J. H. Rattigan* 1272
A Bauxite Deposit in the Paleozoic of Leon, Spain *M. Font-Altaba and J. Closas M.* 1285
Relationship Between the Stratigraphy and Petrography of Pottsville Sandstones and the Occurrence of High-Alumina Mercer Clay ..... *E. G. Williams* 1291

Scientific Communications:
Contact Printing of Drill Cores ..... *William C. Kelly* 1303
Reflectivity Measurements With a Hallimond Visual Microphotometer *B. F. Leonard* 1306

Discussions:
Titanium Mineralogy of Certain Bauxites and Their Parent Materials *James A. Hartman* 1313
The System Cu-Fe-S-O ..... *Hugh McKinstry* 1314

Reviews:
Short Reviews of New Russian Books ..... *C. F. Davidson* 1315
Geotektonische Forschungen, Heft 13. Die Kleintektonische Arbeitsweise unter besonderer Berücksichtigung ihrer Anwendung im deutschen Paläozoikum (Bruno Engels) 1316
The Sea Off Southern California (K. O. Emery) 1317
Subsurface Mapping (M. S. Bishop) 1317
Application de la Géologie aux Travaux de l'Ingénieur (J. Goguel) 1318
New Observations on the Ores of the Witwatersrand and Their Genetic Significance (P. Ramdohr) 1318
Books Received ..... *Roger L. Ames and John E. Cotton* 1319

Society of Economic Geologists 1323

Scientific Notes and News 1343

Number 7

The Fe-As-S System: Phase Relations and Applications. Pt. I.....*Lloyd A. Clark* 1345
Kaolinitic Sediments in Peninsular Florida and Origin of the Kaolin....*E. C. Pirkle* 1382
Scheelite in the Precambrian Gneisses of Colorado.....*Ogden Tweto* 1406
Structural Control and Localization of Gold-Bearing Lodes, Kolar Gold Field, India
S. Narayanaswami, M. Ziauddin and A. V. Ramachandra 1429
Synthetic and Natural Phases in the System Au-Ag-Te. Pt. II.....*N. L. Markham* 1460
Metallization and Post-Mineral Hypogene Argillization, Lost River Tin Mine, Alaska.....*C. L. Sainsbury* 1478
The Chief Oxide-Burgin Area Discoveries, East Tintic District, Utah; A Case History. Pt. II. Bear Creek Mining Company Studies and Exploration
J. B. Bush and D. R. Cook 1507
Chemical Characteristics of Davidite.....*J. R. Butler and Rosemary Hall* 1541

Scientific Communications:
Zonal Arrangement of Metals in Hypogene Veins in Arkansas *Lyndon L. Foley* 1551
Selenium, Rubidium, and Yttrium in Mineral Veins in Arkansas
Lyndon L. Foley 1553
A Rapid and Accurate Contour Interpolator.....*Owen T. Marsh* 1555

Discussions:
The Mineralized Conglomerates of Blind River.....*C. F. Davidson* 1561
Isotopic Composition of Lead and Precambrian Mineralization of the Coeur D'Alene District, Idaho.....*Fred Searls, Jr.* 1565

Reviews:
Physiochemical Principles of Analysis of the Paragenesis of Minerals (Korzhinsky).....*Eugene A. Alexandrov* 1566
Principles of Geochemical Prospecting (Ginzburg).....*H. E. Hawkes* 1567
Short Reviews of New Russian Books.....*C. F. Davidson* 1569
Physics and Chemistry of the Earth, Vol. 3. (Ahrens, Press, Rankama, and Runcorn, Editors)..... 1571
Books Received.....*Roger L. Ames and John E. Cotton* 1572

Society of Economic Geologists..... 1580

Scientific Notes and News..... 1590

Number 8

Sulfur Isotope Investigation of the Gold-Quartz Deposits of the Yellowknife District
R. K. Wanless, R. W. Boyle, and J. A. Lowdon 1591
Differences Between Barren and Productive Intrusive Porphyry
Bronson Stringham 1622
The Fe-As-S System: Phase Relations and Applications. Pt. II....*Lloyd A. Clark* 1631
Thorium, Uranium and Zirconium Concentrations in Bauxite
J. A. S. Adams and K. A. Richardson 1653
Sulfur Isotopes and the Origin of the Sulfide Deposits of the Bathurst-Newcastle Area of Northern New Brunswick.....*William M. Tupper* 1676
Some Ore Occurrences of the Mississippi Valley Type in Equatorial Africa
J. C. Stam 1708
The Origin of Thucholite.....*Henry R. Hoekstra and Louis H. Fuchs* 1716

Position of the Salt-Water Body on the Magothy (?) Formation in the Cedarhurst-Woodmere Area of Southwestern Nassau County, Long Island, N. Y.
N. J. Lusczynski and W. V. Swarzenski 1739

Comments Regarding the Blind River (Algoma) Uranium Ores and Their Origin
Frank R. Joubin 1751

Scientific Communication:

Gold and Silver in Manganese Ore, Polk Co., Arkansas.....*Lyndon L. Foley* 1757

Discussion:

Ilmenite, Magnetite, and Feldspar Alteration Under Reducing Conditions
S. Ralph Austin 1758

Reviews:

Short Reviews of New Russian Books.....*C. F. Davidson* 1760

Geology of the East Tintic Mountains and Ore Deposits of the Tintic Mining Districts.....*Martin Van Couvering* 1762

Water Witching U.S.A. (Vogt and Hyman).....*G. C. Amstutz* 1765

Journal of Petrology, Vol. I, No. 1..... 1765

Geology: Principles and Processes, 5th Edit. (Emmons, Allison, Stauffer and Thiel)..... 1766

Physical Geography, 2nd Edit. (Strahler)..... 1766

Bradley Volume. American Journal of Science..... 1766

Books Received.....*John E. Cotton and Roger L. Ames* 1767

Scientific Notes and News..... 1776

Index, Volume 55..... 1779

Contents, Volume 55..... iii